

February 24, 2005

Mr. Bruce Wolfe
Executive Director
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, #1400
Oakland, CA 94612

SUBJECT: Submittal of Annual Update Reports and Workplans as Required by Order Number R2 2003-0085, NPDES Permit No. CA0037842.

Dear Mr. Wolfe:

The following Clean Bay Strategy is being submitted in fulfillment of the San José/Santa Clara Water Pollution Control Plant (Plant) NPDES permit, Order No. R2 2003-0085, requiring an annual report on Plant watershed activities, including an update on the South Bay Action Plan, Contingency Plan, and Pollutant Prevention and Minimization Plan.

As lead agency of a Joint Powers Authority, the City of San José operates the San José/Santa Clara Water Pollution Control Plant. The Plant treats wastewater from a 300 square mile service area serving 1.4 million residents and 16,000 businesses, including many of the leading computer and electronics manufacturing companies that make up "Silicon Valley."

The City's integrated watershed protection approach to water quality considers all factors influencing water quality in the South Bay and seeks to solve environmental problems in the most cost-effective manner.

The attached 2005 Clean Bay Strategy Report includes:

The South Bay Action Plan is a summary of the activities and achievements in reducing flow to the South Bay for the period January 1, 2004 to December 31, 2004. During the 2004 dry weather season, the Plant's average dry weather effluent flow as defined in the Order was 97.5 million gallons per day (mgd), well below the 120 mgd trigger for the seventh consecutive year. In order to maintain flows below the trigger as the economy improves and to maximize the City's decade-long investment in recycled water, the South Bay Water Recycling Program continues to look for opportunities to cost-effectively expand the system and improve service. One such effort

is a collaboration with the Santa Clara Valley Water District that co-funded the construction of the Silver Creek Pipeline serving the Metcalf Energy Center (MEC). Construction of the Silver Creek pipeline was completed in 2004. Further collaboration with the Santa Clara Valley Water District is underway to explore options for utilizing the City's South Bay Water Recycling project to serve customers south of MEC, including Coyote Valley.

Salt marsh habitat protection is a key element of San Jose's watershed protection efforts. In December 2004, the City successfully completed negotiation and execution of an alternate mitigation agreement with the Water Board, U.S. Fish and Wildlife Service, California Department of Fish and Game and the Peninsula Open Space Trust to provide \$650,000 to the Resource Agencies in lieu of the requirement to restore the Moseley Tract. This agreement represents the final step to fulfill all historical (through June 2002) mitigation requirements placed on the Plant.

This report also includes the annual South Bay Action Plan workplan of flow management activities to be continued in 2005, as well as a Contingency Plan if flows begin to reach levels closer to the Plant's flow trigger.

The Pollutant Prevention and Minimization Program is a summary of activities in place to minimize the Plant's contribution of priority pollutants to the South Bay. These activities include targeted source control measures as well as other local and regional outreach efforts. The Plant has maintained compliance with all its discharge limits during the past year. Mercury, currently a priority pollutant of concern for the watershed, is being addressed through the Plant mercury fate and transport study, as well as participation in the bay-wide and Guadalupe River TMDL processes. The mercury fate and transport study annual progress report is included in this transmittal. In addition, the City continues to contribute to the Regional Monitoring Program to fund an atmospheric deposition sampling station. The Pollutant Prevention and Minimization Plan also addresses potential future compliance issues by reporting on a proactive regional effort of Bay Area dischargers and the Water Board to resolve cyanide regulatory issues. In addition, pollution prevention activities relating to copper, nickel, tributyltin, fats, oils and grease are described in the Plan.

The City looks forward to continue working with Water Board staff to address water quality and permit issues. If you have any questions, please contact me at 408-277-5540.

Sincerely

A handwritten signature in black ink, appearing to read 'Carl W. Mosher', with a long horizontal line extending to the right.

Carl W. Mosher, Director
Environmental Services Department

Cc: Gina Kathuria, RWQCB Permitting Section



Clean Bay Strategy

SOUTH BAY ACTION PLAN

POLLUTION PREVENTION AND MINIMIZATION PLAN

FEBRUARY 2005

SAN JOSE/SANTA CLARA
WATER POLLUTION
CONTROL PLANT

Administered by the Environmental Services Department, City of San José

TRIBUTARY AGENCIES:

Cities of: San José, Santa Clara and Milpitas • Cupertino Sanitary District
West Valley Sanitary District —including Campbell, Los Gatos, Monte Sereno and Saratoga
County Sanitation Districts 2-3 • Sunol and Burbank Sanitary Districts

INTRODUCTION

This report fulfills the San Jose/Santa Clara Water Pollution Control Plant (Plant) NPDES Permit requirement to submit an annual report to the San Francisco Regional Water Quality Control Board (Water Board). It covers activities that occurred during the period January 1, 2004 to December 31, 2004 under Permit Order R2 2003-0085, Provision E. 19 (Annual Status Reports).

The report is structured into two distinct sections:

1. 2005 Action Plan Workplan, Contingency Plan and the South Bay Action Plan Report
2. Pollutant Prevention and Minimization Program (PMP) Report. The PMP summary includes pollutant priorities, sources of pollutants, pollution prevention progress, and plans for the next year.

The two sections are stand-alone reports, facilitating review by Water Board staff and all stakeholders.

PERMIT STRATEGY

Since 1994, the City of San Jose (City) has managed its pollution prevention program using the Clean Bay Strategy (CBS), which defines the policies and principles of watershed management from the City's perspective. The guiding principles for the City's strategy are:

- Holistic approach to environmental restoration.
- Regulatory certainty for the City and industrial dischargers.
- Sound science and data collection as a basis for adaptive management decisions.
- Environmental equity.
- Stakeholder involvement and education.
- Cost-effective environmental protection.

The City believes that a successful watershed management program must integrate wastewater and urban stormwater programs, land use, and transportation planning, into a comprehensive plan to identify the most cost-effective and environmentally beneficial programs. Central to the City's watershed approach is the acknowledgement of benefits that can be provided by the Plant's effluent, such as recycled water uses and habitat improvements. The City supports environmental and regulatory programs that produce a net environmental benefit for the ecosystem, while maintaining regulatory compliance.

One of the steps towards this goal is the City's participation in regional efforts, such as the Santa Clara Basin Watershed Management Initiative (WMI). The WMI Permit Workgroup is committed to holding regular meetings (at least annually over the next five

years) to be better prepared for the next permit negotiation and discuss issues on an ongoing basis. The first annual permit meeting was held in April 2004. Future meetings are scheduled for the spring of each year, following submittal of the annual reports.

EXECUTIVE SUMMARY

South Bay Action Plan Program:

During the Plant's 2004 dry weather season (May-October), the Plant's average dry weather effluent flow¹ (ADWEF) was 97.5 million gallons per day (mgd), well below the 120 mgd ADWEF trigger for the seventh consecutive year. This report also includes the South Bay Action Plan workplan for 2005, accomplishments in 2004, and a contingency plan.

Low dry weather flows are the result of the City's successful conservation and recycling programs, coupled with a sluggish economy for the past three years. In order to maintain low flows below the trigger after the economy improves, the City continues to expand use of the South Bay Water Recycling Program. One such effort is the current collaboration with the Santa Clara Valley Water District to co-fund the construction of the Silver Creek Pipeline to serve Metcalf Energy Center and future customers in the Coyote Valley area (projected average delivery of 5 mgd). Construction of the Silver Creek pipeline was completed in 2004. Further collaboration with the Santa Clara Valley Water District on potential expansion of the recycling system is underway. Construction of the New Civic Center pipeline is also underway. This project will deliver up to 1 mgd of recycled water to San Jose's new civic center, new main library, and San Jose State University and is scheduled for completion in mid 2005. In addition, the South Bay Water Recycling Program staff was moved under the direction of the Municipal Water System, recognizing the importance of recycled water as a water supply source.

In December 2004, the City successfully completed negotiation and execution of an alternate mitigation agreement with the Water Board, U.S. Fish and Wildlife Service, California Department of Fish and Game and the Peninsula Open Space Trust to provide \$650,000 to the Resource Agencies in lieu of the requirement to restore the Moseley Tract. This agreement represents the final step to fulfill all historical (through June 2002) mitigation requirements placed on the Plant for endangered species impacts related to the discharge of fresh water on salt marsh habitat. The City maintains ownership of the Moseley Tract, originally purchased for wetlands restoration in 1996, and is continuing to work with Caltrans and resource agencies on development of a restoration that also resolves outstanding drainage issues.

In addition, the City has continued its active participation in the South Bay salt pond restoration effort. Specifically, the City provided IKONOS imagery of the entire restoration area to the project and has participated in the stakeholder forum and subgroups. The City has also completed a marsh assessment study which is available on the Environmental Services Department (ESD) website.

Pollutant Prevention and Minimization Program (PMP):

¹ ADWEF is calculated by averaging Plant effluent flows from the lowest three consecutive months between May through October.

The Plant has maintained compliance with all its NPDES discharge limits and is actively participating in the various pollutant specific efforts and ongoing TMDL processes.

The PMP is a summary of activities in place to minimize the Plant's contribution of pollutants to the South Bay. These activities include targeted source control measures as well as other local and regional outreach efforts. The current PMP focuses on activities for the following pollutants:

1. Copper and nickel – Continue participation in regional efforts to address bay-wide impairment uncertainties, conduct ambient monitoring in the South Bay, implement copper and nickel Action Plan elements and provide technical assistance to industrial dischargers to identify pollution prevention measures.
2. Mercury – Continue Plant fate and transport study, participate in regional efforts to educate dischargers about mercury sources and pollution prevention.
3. Organic compounds – Continue to support regional efforts to collect data and develop and apply appropriate pollution prevention activities.
4. Cyanide – Continue to investigate appropriate attenuation factor for South Bay.
5. Fats, Oil, and Grease (FOG) – Continue efforts to control FOG locally and participate in regional efforts to develop Sewer System Management Plans and outreach material.

Mercury, currently a priority pollutant of concern for the watershed, is being addressed through the Plant mercury fate and transport study, as well as participation in the bay-wide and Guadalupe River TMDL processes, and the City continues to contribute to the Regional Monitoring Program (RMP) to fund an atmospheric deposition sampling station. The Mercury fate and transport study is the first and most rigorous study of the relative amounts of the various chemical forms of mercury removed and passed through a sewage treatment plant. The information will be considered in the adaptive management process for the Bay-wide mercury TMDL. The Water Board approved a sampling and analysis plan for the study and intensive sampling efforts are underway at various Plant locations. The Pollutant Prevention and Minimization Plan also addresses potential future compliance issues by reporting on a proactive regional effort of dischargers and the Water Board to resolve cyanide regulatory issues. In addition, pollution prevention activities relating to copper, nickel, tributyltin, fats, oils and grease are described in the Plan.

NEXT STEPS

The following areas will be the focus for the next reporting period (2005):

- Prepare Marsh Assessment Study and submit workplan in 2005 or early 2006 for synoptic species surveys of clapper rail and salt marsh harvest mouse.
- Continue implementation of mercury fate and transport workplan and report to Water Board staff preliminary results and Phase II.
- Continue participation in TMDL and other pollutant specific efforts, including Guadalupe mercury TMDL, North Bay copper and nickel TMDL, and cyanide shallow water dischargers group.

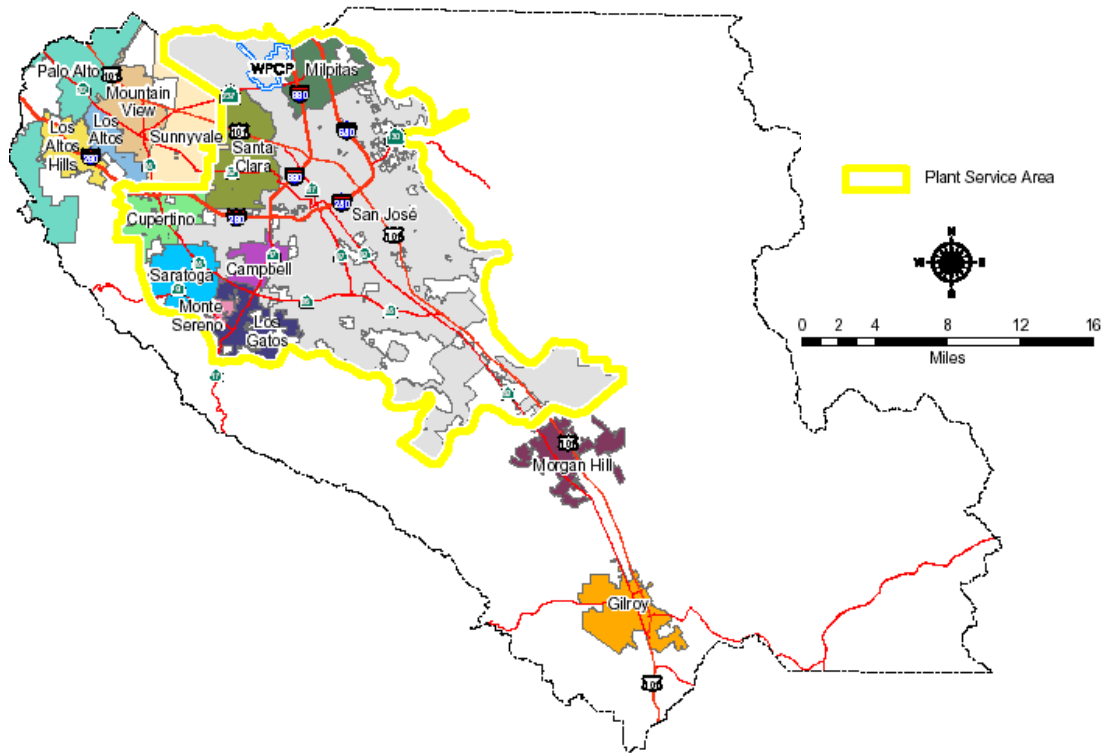


FEBRUARY 2005 CLEAN BAY STRATEGY REPORT

- Participate in regional habitat improvement projects such as salt pond restoration and continue support for community-based stakeholder processes to protect the watershed such as the Santa Clara Basin Watershed Management Initiative (WMI).
- Conduct a review of the City's local limits and submit a report to the Water Board at the end of 2005.
- Implement the South Bay Action Plan Workplan.

All activities proposed in the Clean Bay Strategy are subject to the appropriation of funds by the San José City Council. Clean Bay Strategy Reports, as well as other studies and information related to South Bay Water Quality issues, may be found on the following website: <http://www.sanjoseca.gov/esd/>

**AREA TRIBUTARY TO THE SAN JOSÉ / SANTA CLARA WATER POLLUTION CONTROL PLANT
NPDES PERMIT CA0037842**



The City of San José manages the San José/Santa Clara Water Pollution Control Plant (Plant) for the Cities of San José, Santa Clara, Milpitas, Cupertino Sanitation Districts 2-3, Sunol and Burbank Sanitary Districts and West Valley Sanitation District (Campbell, Lost Gatos, Monte Sereno, and Saratoga) as shown above. The Plant is located at the southern end of one of the most important estuaries in the United States and receives discharge from over 1.4 million residents and more than 16,000 commercial and industrial facilities, including the leading companies of Silicon Valley.

Treatment Process: The wastewater treatment process consists of screening and grit removal, primary sedimentation, secondary (biological nutrient removal) treatment, secondary clarification, filtration, disinfection, and dechlorination.

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Abbreviations and Units of Measure

Action Plan	Revised South Bay Action Plan
ADWEF	Average Dry Weather Effluent Flow
BACWA	Bay Area Clean Water Agency
BAPPG	Bay Area Pollution Prevention Group
BASMAA	Bay Area Stormwater Management Agencies Association
Bay	San Francisco Bay
BMP	Best Management Practice
CBS	Clean Bay Strategy
CEP	Clean Estuary Partnership
City	City of San José
EE	Environmental Engineering
ESD	Environmental Services Department
FAS	Flow Audit Study
FY	Fiscal Year
GWI	Groundwater Infiltration
Industrial	Industrial Water Recycling and Reuse
IPM	Integrated Pest Management
JPA	Joint Powers Authority
IU	Industrial User
IWRP	Integrated Water Resources Plan
NPDES	National Pollutant Discharge Elimination System
P2	Pollution Prevention
Plant	San José/Santa Clara Water Pollution Control Plant
PMP	Pollutant Prevention and Minimization Program
POTW	Publicly Owned Treatment Works
RMP	Regional Monitoring Program
SBWR	South Bay Water Recycling
SOP	Standard Operating Procedure
South Bay	San Francisco Bay, South of Dumbarton Bridge
SSO	Site Specific Objective
State Board	California State Water Resources Control Board
TMDL	Total Maximum Daily Load
Tributary Agencies	Cities and Agencies Tributary to the Plant: San José; Santa Clara; Milpitas; Cupertino Sanitary District; West Valley Sanitary District – Campbell, Los Gatos, Monte Sereno, and Saratoga; County Sanitation Districts 2 and 3, and Sunol and Burbank Sanitary Districts
ULFT	Ultra-Low Flush Toilet
Urban Runoff Program	Santa Clara Valley Urban Runoff Pollution Prevention Program
U.S. EPA	United States Environmental Protection Agency
Water Board	California Regional Water Quality Control Board, San Francisco Bay Region
Water District	Santa Clara Valley Water District

Abbreviations and Units of Measure

WEP	Water Efficiency Program
WET	Water Efficient Technologies
WMI	Santa Clara Basin Watershed Management Initiative

UNITS OF MEASURE

ccf	hundred cubic feet
gpd	gallons per day
LF	linear feet
mgd	million gallons per day
ppb	parts per billion
ppd	pounds per day (lbs/day)
ppt	parts per trillion

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2005 South Bay Action Plan

Workplan,

Contingency Plan,

And

2004 Activity Update

San José/Santa Clara Water Pollution Control Plant

Administered by the Environmental Services Department, City of San José

Tributary Agencies: Cities of San José, Santa Clara and Milpitas • Cupertino Sanitary District • West Valley Sanitary District – including Campbell, Los Gatos, Monte Sereno and Saratoga • County Sanitation Districts 2-3 • Sunol and Burbank Sanitary Districts

2005 SOUTH BAY ACTION PLAN WORKPLAN					
Activities based on calendar year unless otherwise noted.					
Provision	Program	Activities	Deliverables	Projected Flow Reduction/ Measure of Effectiveness	Comments
E.11.a. Water Efficiency	Water Efficiency Program (WEP)	<p>List of Program Activities for FY 2004/2005</p> <ul style="list-style-type: none"> Analyze results of Toilet Flapper Research. Continue cost sharing agreement with the Water District to conduct flow reduction activities and provide rebates. Programs include toilet retrofits, washing machine rebates (commercial and residential), and rebate programs for process changes in commercial, institutional and industrial settings. Develop standard rebates for other types of equipment such as ice machines. Water Efficient Technologies (WET) financial incentive program for commercial businesses, hospitals, and grocery stores. Work with City Departments to change San Jose's municipal code to allow waterless urinal installation. 	<ul style="list-style-type: none"> Repeat targeted direct mail outreach to past participants in the City's ULFT retrofit programs. Flow reduction achieved through county wide incentive programs. Participation in WET commercial program. Modified municipal plumbing code 	<ul style="list-style-type: none"> 0.175 mgd flow reduction for FY 2004/2005 Customer satisfaction with programs and fixtures Cost effectiveness of the programs. 	Due to the continuing reduced flows to the Plant, diminishing returns, and budgetary uncertainty, WEP will focus on the most cost-effective programs only in FY 04/05.

2005 SOUTH BAY ACTION PLAN WORKPLAN					
Activities based on calendar year unless otherwise noted.					
Provision	Program	Activities	Deliverables	Projected Flow Reduction/ Measure of Effectiveness	Comments
E.11.a. Water Efficiency	Industrial Recycling and Reuse	<ul style="list-style-type: none"> • Technical information outreach • Water Efficient Technologies (WET) financial incentive program for industrial dischargers. 	<ul style="list-style-type: none"> • Guidelines for Efficient Water Use • Final Industrial Wastewater Reuse Guidelines • One Industrial User (IU) Academy • Four IU Newsletters • One Case Study of an industrial water reduction project • Five WET projects 	100,000 gpd for 2005	
E.11.a.	South Bay Water Recycling	Description of Phase II A implementation: Silver Creek Pipeline co-funded with the Water District has been completed.	Silver Creek pipeline is operational.	Potential 6.0 – 8.0 mgd use in service	Project complete, in the process of being accepted by the City.
E.11.a.	South Bay Water Recycling	Other projects for 2004/2005 (reliability)	<ul style="list-style-type: none"> • Zone 3 Reservoir • Complete Civic Center Pipeline in 	<ul style="list-style-type: none"> • Zone 3 Reservoir increases 	<ul style="list-style-type: none"> • Reservoir property to be acquired by

2005 SOUTH BAY ACTION PLAN WORKPLAN					
Activities based on calendar year unless otherwise noted.					
Provision	Program	Activities	Deliverables	Projected Flow Reduction/ Measure of Effectiveness	Comments
			Center Pipeline in 2005.	increases system reliability. Potential 5 mgd usage from Metcalf Energy Center <ul style="list-style-type: none"> Potential 1 mgd Civic Center use once in service. 	acquired by 1/05; facility complete by 8/06. Project timeline as reported in 2004 CBS adjusted due to delays in land acquisition. <ul style="list-style-type: none"> Civic Center project under construction.
E.11.a.	South Bay Water Recycling	List of Outreach/Marketing Activities for 2004-2005 <ul style="list-style-type: none"> Water Quality Report Annual Site Supervisor Training and Landscapers' Workshop Training to new and existing customers to comply with permit requirements and to promote benefits and best practices of recycled water. Outreach on new construction 	<ul style="list-style-type: none"> A Water Quality Report will be mailed directly to over 400 customers. Provide annual training. 		Site supervisor and landscaper training combined.
E.13.	Salt Marsh Vegetative Assessments	Document changes in marsh habitat to determine the status of endangered species habitat in the areas that are or	Report will be posted on ESD website documenting		Required in 2005 and 2007

2005 SOUTH BAY ACTION PLAN WORKPLAN					
Activities based on calendar year unless otherwise noted.					
Provision	Program	Activities	Deliverables	Projected Flow Reduction/ Measure of Effectiveness	Comments
		reasonably could be influenced by Plant discharge. (Study area)	changes in tidal marsh vegetative habitat in 2005.		
E.14.	Clapper Rail and Salt Marsh Harvest Mouse Surveys	<ul style="list-style-type: none"> • Perform a synoptic survey to provide information on the presence or absence of the California clapper rail and salt marsh harvest mouse. • Submit workplan six months prior to beginning the survey to the Regional Board, the CDFG, and USFWS, Sacramento Office. • Final report to be submitted by 02/28/07. 	Not required in 2005.		Survey required in 2006. Workplan to be submitted 6 months prior.

SOUTH BAY ACTION PLAN CONTINGENCY PLAN

The NPDES permit provision E.11.b. requires the submittal of a contingency plan that describes the planning effort to identify water recycling and conservation efforts over and above current levels should Plant effluent flows increase significantly. The process to initiate additional flow reduction activities includes:

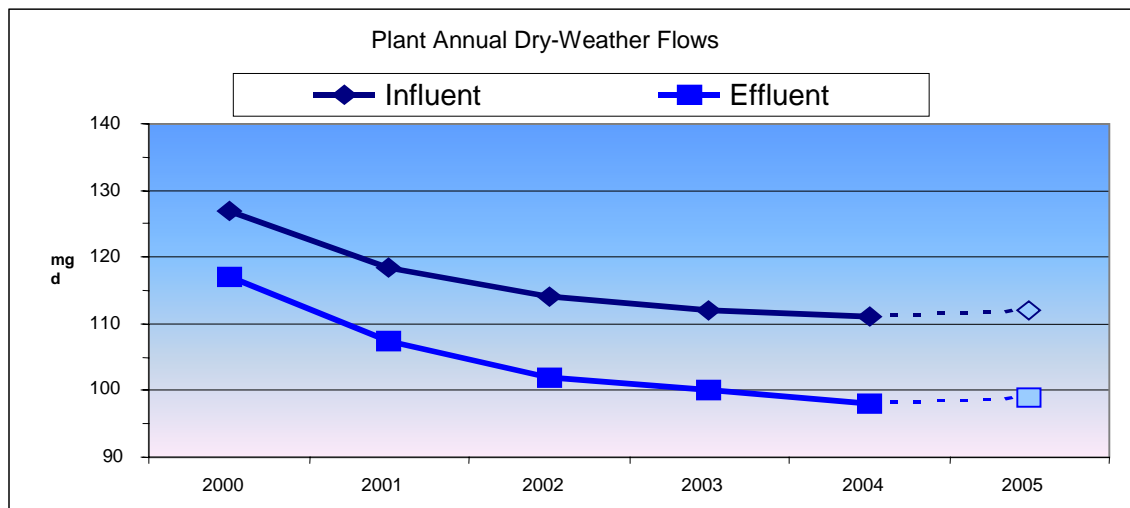
- Update the flow projection annually to establish “best projection” of effluent flows.
- Begin analysis of potential additional programs if average dry-weather effluent flows (ADWEF) reach a planning trigger of 115 mgd, which was determined using a safety factor that accounts for time to implement activities, projected growth, and City policy.
- Such analysis would include:
 1. Identifying and developing characteristics of potential future flow reduction programs/projects, including program cost, flow reduction projection, implementation schedule, benefit characteristics as needed for benefit cost analysis.
 2. Prioritizing potential programs/projects using benefit cost analysis and policy decisions on priorities for programs at the time.
 3. Determining implementation period required to achieve the next significant increment of flow reduction.
- The analysis would be submitted to the Water Board as a more detailed contingency Action Plan in the year that follows ADWEF reaching the planning trigger.
- If flows continue to rise, priority projects will be implemented.

EFFECTIVENESS EVALUATIONS

The South Bay Action Plan activities result in reduced flows to the Bay as their primary effectiveness measure. The Salt Marsh Vegetative Assessment and Avian Botulism reports provide information that may be useful in evaluating trends of the local ecosystem.

PLANT FLOWS

Plant dry-weather hydraulic flows have continued to decrease since 2000. The average dry-weather effluent flow (ADWEF), measured as the average of the lowest three consecutive months from May to October, has continued to drop to its lowest value since 1991, with 2004 ADWEF of 97.5 mgd. This drop in influent (16% between 2000 and 2004) has been primarily from the non-residential sector caused by the economic slowdown and the corresponding loss of over 137,000 jobs in the Plant service area. There has also been a shift from more water use-intensive jobs (e.g., fruit canning and semi-conductor chip manufacturing) to those using less (e.g., service and retail sectors and software development). Residential populations have risen steadily over the same period (up 37,000 or 3% since 2000). However, influent flow from this sector has actually decreased slightly due to continued conservation (e.g. plumbing codes, retrofits and incentives). The downward flow trend is expected to level off in 2005 and possibly rise slightly due to a projected increase in economic activity and number of jobs in the Plant Service Area. The City will continue monitoring Plant influent and effluent flows monthly and service area trends on a quarterly basis.



Data Sources: SJ/SC WPCP flows, the California Department of Employment Development, the California Department of Finance, Demographic Research Unit on jobs and residential population figures.

2004 SALT MARSH VEGETATIVE ASSESSMENT

The City performed a marsh assessment study for 2004 as part of its long-term monitoring program that began in 1989. The 2004 marsh assessment should also provide baseline information prior to the initial release period for the South Bay Salt Pond Restoration Project. This project has the potential to significantly alter marsh vegetation in the South San Francisco Bay (South Bay) as ponds are opened for discharge to the Bay.

In 2001 and to a higher degree in 2002, brackish marsh conversion to salt marsh occurred due to a dieback of alkali bulrush and replacement with pickleweed and cordgrass. During this same period, Plant dry-weather effluent flows dropped from 116 mgd in 2000, to 107 mgd in 2001 and 102 mgd in 2002, while other key freshwater sources were less than normal. In 2003, with Plant flows continued dropping to 100 mgd, some conversion back to brackish marsh occurred in some of the marshes that converted to salt marsh in the previous year. Both the Transition Reach in the Main Study Area and the Reference area (located in Alviso Slough) showed salt marsh to brackish marsh conversion, while the Lower Reach closest to the Bay showed gains in salt marsh. In 2004, with dry-weather effluent flows at 97.5 mgd, last year's trend continued with overall salt marsh gains in the Lower Reach and a small amount of conversion from salt marsh to brackish marsh in the Transition Reach and Reference Reach.

Between 1989 and 1999 the relative change in habitat types through time was less in the Main Study Area than in the Reference Area. Overall gains in salt marsh habitat in the last four years (2001 to 2004) highlight the influence of multiple factors affecting changes in marsh vegetation communities in the South Bay. In light of these trends and the Plant's decreasing flows over the last four years (2004 flows were the lowest since 1991), it is likely that much of the interannual variation in habitats within the South Bay marshes is due to large-scale environmental factors. The 2004 report will be available in March on the Environmental Services Department's website at <http://www.sanjoseca.gov/esd/marshplant.htm>

AVIAN BOTULISM

An Avian Botulism outbreak was detected throughout the South Bay including Coyote Creek Lagoon, portions of the Don Edwards National Wildlife Refuge, Sunnyvale Water Pollution Control Plant, areas of Mountain View and on Santa Clara Valley Water District property in September 2004. ESD staff responded to the outbreak by conducting clean up activities on San Jose/Santa Clara Water Pollution Control Plant (Plant) property. On Plant property, the outbreak was concentrated in the Residual Sludge Management (RSM) area in and around inundated sludge lagoons used by migratory waterfowl. Clean up efforts to minimize the impact on wildlife on Plant property commenced immediately after the outbreak was identified. Over the course of approximately seven weeks, fourteen surveys were conducted in the RSM area by ESD staff and a total of 808 dead birds and 187 sick birds were collected. Surveys involved collection of sick and dead birds and generally required the efforts of 4-6 individuals for a day to survey the area, clean up, coordinate, transport and dispose of affected birds. Carcasses of dead birds were transported to a disposal facility for incineration. Sick birds were transported to the Wildlife Center of Silicon Valley for rehabilitation and release. Prompt

clean up and disposal of dead carcasses and rehabilitation of sick birds is a critical step to minimize the impact of botulism outbreaks. ESD staff put forth tremendous effort to mitigate the impact on Plant property and coordinate with other regional agencies to minimize the overall botulism outbreak in the South Bay. Staff also ensured that the nearly 200 sick birds collected on Plant property received prompt care and rehabilitation by working closely with the Wildlife Center of Silicon Valley.

2005 South Bay Action Plan Activities Update

WATER CONSERVATION AND RECYCLING PROGRAMS PERMIT PROVISION: E.11.a. EFFECTIVENESS MEASURES: Influent flow reduction. 4-YEAR FLOW REDUCTION GOAL: 1 MGD	
Accomplishments	Future Activities 2005
Water Efficiency (<i>Based on fiscal year</i>)	
FY 2003-2004 <ul style="list-style-type: none"> ➤ Toilet Flapper research study implemented. ➤ Continued cost sharing agreement with Santa Clara Valley Water District. Flow reduction programs included Water Efficient Technologies program for commercial and institutional entities, waterless urinals retrofit program in San Jose Unified School District , Direct Distribution Ultra Low Flush Toilet (ULFT) program and other rebate and incentive programs. ➤ Water Efficient Technologies (WET) financial incentive program for commercial businesses continued. 	FY 2004-2005 <ul style="list-style-type: none"> ➤ Continue cost sharing agreement with the Santa Clara Valley Water District. Flow reduction programs include Water Efficient Technologies programs for commercial and institutional entities, City supported Water District programs such as H-axis washing machine rebates, restaurant pre rinse sprayer retrofits, ULFT retrofits, medical equipment retrofits and High Efficiency Toilet (1.0 and dual-flush) retrofits. ➤ Municipal code change to allow for waterless urinal installation in San Jose. ➤ Develop standard rebates for ice machines. ➤ Finalization of the Flapper Research Study.

WATER CONSERVATION AND RECYCLING PROGRAMS PERMIT PROVISION: E.11.a. EFFECTIVENESS MEASURES: Influent flow reduction. 4-YEAR FLOW REDUCTION GOAL: 1 MGD	
Accomplishments	Future Activities 2005
Industrial Recycling and Reuse – Water Efficient Technologies	
<ul style="list-style-type: none"> ➤ Provided technical information and outreach on flow reduction technologies. Completed case study for Reaction Technology. Text for Flow Reduction Developed draft “Guidelines for Efficient Water Use in Business Operations” based on the FAS is near final. ➤ Provided Water Efficient Technologies (WET) financial incentives to encourage industrial water conservation and reuse. Seven WET projects with total rebates of \$211, 948 were completed and resulted in a water use reduction of approximately 142,600 gpd. ➤ Produced “Guidelines for Industrial Wastewater Reuse” to expedite industrial reuse projects through the building permit process. Distributed Winter 2004 Industrial User newsletter. 	<ul style="list-style-type: none"> ➤ Continue to pursue further case studies for completed projects. ➤ Complete at least one Industrial User Academy and four Industrial User newsletters in 2005. ➤ Complete text and layout of flow reduction guidelines using information from Flow Audit Study protocol. Print and begin distribution in 2005. ➤ Distribute “Guidelines for Industrial Wastewater Reuse” to prospective WET applicants. ➤ Track active WET applications with an estimated 189,000 gpd flow reduction.

2005 South Bay Action Plan Activities Update

SOUTH BAY WATER RECYCLING PERMIT PROVISION: E.11.a. EFFECTIVENESS MEASURES: Influent and effluent flow reduction. 4-YEAR FLOW REDUCTION GOAL: 6-8 MGD	
Accomplishments	Future Activities 2005
Phase II A implementation	
Continue construction projects. Two of three new electric power generation facilities connected (Los Esteros Critical Energy Facility, Pico Power Facility in Santa Clara)	Power plants in San José and Santa Clara projected to use an additional 7 mgd in summer.
Collaborative Effort with the Santa Clara Valley Water District (WATER DISTRICT)	
<ul style="list-style-type: none"> ➤ Continue collaborative efforts between the Plant Joint Power Authority and the Water District on the operation and maintenance of the SBWR system. The focus is on completing the County's long term water supply planning process and performing water quality studies ➤ Construction of the Silver Creek pipeline is complete. The system is able to deliver 5 mgd. ➤ Pilot study for advanced treatment to determine the efficiency and effectiveness of using various advanced treatment method of salt removal from tertiary treated recycled water is complete. 	<ul style="list-style-type: none"> ➤ Additional expansion in the Coyote Valley area will depend on collaborative discussions with the Water District. ➤ Develop recommendations for advanced treatment based on pilot study.

<p>SOUTH BAY WATER RECYCLING</p> <p>PERMIT PROVISION: E.11.a. EFFECTIVENESS MEASURES: Influent and effluent flow reduction. 4-YEAR FLOW REDUCTION GOAL: 6-8 MGD</p>	
Accomplishments	Future Activities 2005
Outreach/Marketing	
<ul style="list-style-type: none"> ➤ Customer Satisfaction Survey completed. ➤ Water Quality data updated every two months on the website http://www.sanjoseca.gov/sbwr/water-quality.htm ➤ Water Focus Survey completed. Survey used to guide the Water Efficiency Program and SBWR residential outreach. ➤ Produced and distributed construction mailers via email, internet, mail and in person to residents and businesses near the SBWR pipeline construction project. Mailers also promoted the benefits of recycled water. ➤ Radio and print ads to inform commuters on construction project and road delays/closures. ➤ Continue to sponsor and attend community events such as Spring In the Guadalupe Garden. Over 1,000 people attended. Answer questions regarding SBWR pipeline construction projects and promote and educate the public on the benefits of recycled water. ➤ Held Landscapers' Workshop and Site Supervisor Training. ➤ Sponsored a San José Giants baseball game. 	<ul style="list-style-type: none"> ➤ Continue current efforts for training and events. ➤ For construction outreach, continue current efforts except for radio and print ads. ➤ Develop outreach on SBWR emerging issues (e.g. redwood trees, Coyote Valley development issues.) ➤ Produce a SBWR 5 year report. ➤ Update, improve web as outreach tool.

<p style="text-align: center;">SOUTH BAY WATER RECYCLING</p> <p>PERMIT PROVISION: E.11.a. EFFECTIVENESS MEASURES: Influent and effluent flow reduction. 4-YEAR FLOW REDUCTION GOAL: 6-8 MGD</p>	
Accomplishments	Future Activities 2005
GIS Mapping	
<ul style="list-style-type: none"> ➤ Worked with City of Santa Clara to develop a GIS-based hydraulic model for the SBWR distribution system. The computer model is complete. Santa Clara to ground truth meter locations and verify other data needs to improve the accuracy of the predictive model. ➤ Produce and distributed map books of the SBWR system for field personnel for operations and maintenance. 	Continue to provide technical support to the modeling project until completion.

2005 South Bay Action Plan Activities Update

GROUND WATER INFILTRATION	
PERMIT PROVISION: EFFECTIVENESS MEASURES: Influent flow reduction.	
4-YEAR FLOW REDUCTION GOAL: 1 MGD FROM PLANT SERVICE AREA	
Accomplishments	Future Activities 2005
Ground Water Infiltration	
Public Works is currently investigating other specific sources and locations for future projects. These areas include pipelines upstream of Redmond Avenue Rehabilitation Project, the 30-inch diameter pipe along Bayshore Highway, a 24 inch clay pipe in 7 th Street, and the Downer-Canoas sewer line. Future work will be dependent upon available funding.	The Plant's involvement has focused on groundwater infiltration reduction and has met its intended target. This program will cease as a responsibility of the Plant. Future ongoing reductions of I&I are part of routine sewer maintenance and rehab, and will be described in the City's Sewer System Management (SSMP) Plan. Future reporting in of these activities will reference the Sanitary Sewer Overflow and SSMP annual reports to the Water Board from our service area once annual reporting begins.
West Valley Sanitation District Sewer Rehabilitation Program	
<ul style="list-style-type: none"> ➤ Saratoga-Sunnyvale Basin Sewer Rehabilitation, Saratoga. Replaced 20,870 feet of sewer main and 218 connecting laterals. Net dry weather flow reduction after project completion was 92,000 gpd. ➤ East Main Street Basin Sewer Rehabilitation, Los Gatos. Replaced 44,862 feet of sewer main and 640 connecting sewer laterals. Net dry weather flow reduction after project completion was 51,000 gpd. 	WVSD continues to rehabilitate old sewers throughout its service area. Recently completed rehabilitation of several thousand feet of mains in the Hamilton basin (Valley Medical Center area) and will be following up with post-project dry weather flow monitoring later this year. Another major rehabilitation project in the old town area of Los Gatos is scheduled for construction this spring. Net flow reductions will be analyzed and reported in 2006.

2005 South Bay Action Plan Activities Update

SALT MARSH VEGETATIVE ASSESSMENT PERMIT PROVISION: E.13. EFFECTIVENESS MEASURES: Assessment Completed	
Accomplishments	Future Activities 2005
Salt Marsh Vegetative Assessment	
<ul style="list-style-type: none"> ➤ H.T. Harvey completed an assessment for 2004. The report is available on the Environmental Services Department's website at www.sanjoseca.gov/esd/marshplant.htm See pages 6-7 of the ACTION PLAN report for a brief summary. ➤ Investigated the use of IKONOS imagery as a cost-effective method of performing vegetative assessments. Consultant comparisons between IKONOS imagery and aerial photography revealed <1% difference in marsh assessment results. 	Salt Marsh Vegetative Assessments are required in 2005 and 2007. IKONOS will be used for the 2005 assessment.
Moseley Tract	
<ul style="list-style-type: none"> ➤ Restoration of the Moseley Tract is no longer a permit requirement due to the execution of the alternate mitigation agreement. 	As owners of the property, the City will continue to work with Caltrans and other agencies to resolve the Moseley Tract drainage and flooding issues.
<ul style="list-style-type: none"> ➤ Executed agreement with USFWS, DFG, Water Board, and POST on December 16, 2004. The \$650,000 were transmitted to POST on 12/22 and deposited into an account on 1/4/2005. This completes all historic mitigation requirements through June 2002. 	Requirement completed.

<p>SALT MARSH VEGETATIVE ASSESSMENT</p> <p>PERMIT PROVISION: E.13. EFFECTIVENESS MEASURES: Assessment Completed</p>	
Accomplishments	Future Activities 2005
State and Federal Salt Pond Restoration Project Participation (not required by permit)	
<ul style="list-style-type: none"> ➤ The City has provided high resolution multi-spectral satellite imagery for the entire restoration project area from Space Imaging Inc. to all project stakeholders. The data provides a basemap for the project. ➤ The City provided several years of data describing South San Francisco Bay water quality that was collected from the 12 South Bay ambient monitoring stations. ➤ City staff actively participate in the stakeholder forum and in subgroups, including habitat, flood management, GIS, A8 subgroups, and sediment workshop. 	Continue to participate in stakeholder activities and provide technical assistance as appropriate.

2005 South Bay Action Plan Activities Update

SANTA CLARA BASIN WATERSHED MANAGEMENT INITIATIVE (WMI) PERMIT PROVISION: E.10. EFFECTIVENESS MEASURES: Continued Participation	
Accomplishments	Future Activities 2005
Core Group	
➤ First year work plans were completed.	➤ Continue work plan implementation. www.scbwmi.org
➤ Workgroup H and I	
➤ City staff has participated in Workgroups H and I charged with developing a report card on WMI Action Plan implementation. Kirsten Struve was nominated to co-chair workgroup I.	➤ Continue active participation in report card development.
➤ Bay Modeling and Monitoring Subgroup	
➤ Hold annual meeting with Water Board and stakeholders to discuss South Bay permit activities and issues. ➤ Obtained agreement from Water Board to work towards a bay-wide copper and nickel management strategy and eventually revise the South Bay Cu/Ni Action Plans to be consistent with bay-wide strategy. Staff provided technical and regulatory review and documentation as part of the CEP North of Dumbarton Bridge Copper and Nickel TMDL stakeholder process. Actively participating in that effort.	➤ Annual meeting held in April. Future meetings will be scheduled in the spring of each year. ➤ Continue active participation.

2005 South Bay Action Plan Activities Update

<p style="text-align: center;">AVIAN BOTULISM</p> <p>PERMIT PROVISION: E.2. EFFECTIVENESS MEASURES: Complete Survey</p>	
Accomplishments	Future Activities 2005
Avian Botulism Control Program	
<ul style="list-style-type: none"> ➤ Continued contract with the San Francisco Bay Bird Observatory (SFBBO) to conduct avian botulism surveys of tidal areas in Artesian Slough, Coyote Creek and Alviso Slough under influence of fresh and brackish water from May through October 2003. ➤ An Avian Botulism outbreak was detected in the South Bay during late summer 2004. ➤ From 9/3/04 to 10/15/04, City staff conducted 14 additional surveys and cleanup of affected birds in the RSM (lagoon) area of the SJ/SC WPCP to lessen extent of the South Bay outbreak. Staff removed a total of 808 dead and 187 sick birds. Sick birds were transported to the Wildlife Center of Silicon Valley for rehabilitation. ➤ USFWS conducted six surveys of Coyote Creek Lagoon in September 2004 and collected 287 dead and 38 sick birds. ➤ Additional collection of affected birds (almost exclusively waterfowl) occurred throughout the South Bay. Agencies that participated in efforts included USFWS, SFBBO, Santa Clara Humane Society, Wildlife Center of Silicon Valley, Santa Clara Valley Water District and the Cities of Sunnyvale, Milpitas, Palo Alto, and Mountain View. ➤ Submitted Avian Botulism report to CDFG, USFWS, and Water Board on February 1, 2005. 	<ul style="list-style-type: none"> ➤ Continue avian botulism program that includes internal outreach to appropriate staff.

Pollutant Prevention and Minimization Plan (PMP)

San José/Santa Clara Water Pollution Control Plant

Administered by the Environmental Services Department, City of San José

Tributary AgenciesCities of San José, Santa Clara and Milpitas •
Cupertino Sanitary District • West Valley Sanitary District – including
Campbell, Los Gatos, Monte Sereno and Saratoga • County Sanitation
Districts 2-3 • Sunol and Burbank Sanitary Districts

BACKGROUND

This Pollution Prevention and Minimization Program (PMP) Report has been prepared to fulfill provision E.7.b of the San Jose/Santa Clara Water Pollution Control Plant's (Plant) 2003 NPDES permit. The key goals of a PMP are to: 1) identify current pollutants of concerns and their sources 2) establish control measures for minimizing the discharge of these pollutants to the South San Francisco Bay (South Bay) 3) develop timelines for implementing the control measures, and 4) determine effectiveness measures to gauge progress.

During 2004, there were no discharge violations of any permit limitations. However, in the course of a study to investigate cyanide formation in the Plant and to determine an attenuation factor for cyanide in Lower South Bay, elevated levels of cyanide were detected in final effluent during May and November. The first episode in May proved that there is natural cyanide attenuation in the Lower South Bay. Both incidents have been reported to the Water Board as part of the attenuation studies and appropriate Source Control pretreatment procedures are being implemented. Increased inspections and surveillance monitoring are underway and appropriate actions will be taken after analysis of the data. A detectable level of tributyltin was observed during final effluent monitoring for 13267 technical information request. Therefore, cyanide and tributyltin are considered Pollutants of Concern and are discussed below along with the pollutants with effluent limitations in the Plant's permit.

This report summarizes the City's 2004 PMP activities and ongoing efforts to minimize the Plant's contribution of "priority pollutants" to the South Bay.

POLLUTANTS OF CONCERN

For 2004, the City has identified six groupings of pollutants of concern. A description of each pollutant grouping and the reason for their inclusion is provided below.

1. Copper and Nickel – Reportable Priority Pollutants due to a reasonable potential (using the State Implementation Plan Trigger 3) to contribute to ambient levels in the South Bay. Regulatory findings resulted in effluent limits for copper and nickel being included in the Plant's NPDES Permit.
2. Mercury, 4,4'-DDE, Dieldrin, and Dioxin – Reportable Priority Pollutants due to a reasonable potential to contribute to an excursion above water quality criteria. These constituents are on the 2002 303(d) list. This reasonable potential was determined due to background levels in the receiving waters being above the water quality criteria (using the State Implementation Plan Trigger 2), and not due to levels in the Plant's effluent.
3. Benzo(b)fluoranthene, Indeno(1,2,3-cd)pyrene, and Heptachlor epoxide – Reportable Priority Pollutants due to a reasonable potential to contribute to an excursion above water quality criteria. This reasonable potential was determined due to background levels in the receiving waters being above the water quality

criteria (using the State Implementation Trigger 2), and not due to levels in the Plant's effluent.

4. Cyanide – Included due to potential future regulatory requirements.
5. Fats, Oil & Grease (FOG) – Included due to the pending regulatory requirements from the Water Board for collection system operators to prepare Sewer System Management Plans that include a description of their FOG management program.
6. Tributyltin – Included due to potential future regulatory requirements. No current sources of tributyl tin have been identified, however, tributyl tin was used in the past as part of water treatment for cooling towers, and some old cooling towers could potentially still contain tributyl tin. A fact sheet about tributyl tin for cooling tower operators has been updated and will be distributed in 2005 as part of a newsletter for Industrial Users.

For 4,4'-DDE, dieldrin, dioxin, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and heptachlor epoxide, detection limits are above the water quality criteria, and all results for the last three years have been non-detects. For mercury, the maximum pollutant concentration observed is well below the water quality criteria.

POLLUTION PREVENTION ACTIVITIES

The City has a variety of activities in place to minimize the Plant's contribution of priority pollutants to the South Bay. These activities include targeted source control measures as well as other local and regional outreach efforts. The following tables describe the PMP activities completed during 2004 and those planned for 2005. The City has also begun a technical review of its Local Limits and plans to submit a report to the Water Board by the end of 2005.

Regional Activities

In addition to implementing targeted PMP activities, the City participates in various regional pollution prevention and monitoring efforts including the Regional Monitoring Program (RMP) and Clean Estuary Partnership (CEP). These groups work on a variety of pollutants and so an overall description of their efforts is included here. The tables for specific pollutants also include information from the RMP and CEP.

REGIONAL MONITORING PROGRAM

The Water Board created the RMP in 1993 to provide water quality information to better manage environmental programs in the Bay Estuary. The RMP is the primary source of high quality information used to evaluate chemical contamination in the Bay. The RMP is a collaborative effort between the San Francisco Estuary Institute, the Water Board, and the regulated discharger community. Yearly financial commitments approximating \$3 million are pooled and applied in a comprehensive manner to better understand contaminant impacts to the beneficial uses in the Bay. The RMP currently focuses on determining spatial patterns and long term trends through sampling of water, sediment, bivalves, and fish, effects on sensitive organisms, and chemical loading to the Bay, and seeks to synthesize RMP data with information from other sources to provide the most complete assessment possible of chemical contamination in the Bay. The primary program objectives include:

- Describe patterns in contaminant concentration and distribution.
- Describe sources and loading of contamination to the Estuary
- Measure contaminant effects in the Estuary ecosystem.
- Compare monitoring information to relevant regulatory guidelines.
- Synthesize and distribute information from a range of sources.

The City contributes financially to the RMP and provides in-kind staff support to operate a mercury sampling station as part of the Mercury Atmospheric Deposition Network. City staff is actively involved in the technical activities of the RMP, with staff chairing the RMP Technical Advisory Committee. The City will continue its active support and participation in the RMP throughout 2005. RMP program highlights for calendar year 2004 included:

- “Pulse of the Estuary” publication released in May 2004
- Annual Meeting held at the Lawrence Hall of Science in May 2004
- Mercury Coordination Meeting conducted in February 2004
- Started “San Francisco Bay Mercury News,” and electronic newsletter summarizing current mercury research
- Published three issues of the RMP Newsletter in 2004
- Completed the 12th year of Status and Trends monitoring of water, sediment, and bivalves
- Convened a special session on mercury at the CALFED Science Conference
- Developed a multi-box mathematical model for PCBs in the Bay

- Completed 2003 Program Review, identifying program strengths and areas for improvement
- Revised program objectives and management questions
- Improved web access to RMP datasets

CLEAN ESTUARY PARTNERSHIP

The CEP was formed in September 2001 between the Water Board, the Bay Area Stormwater Management Agencies Association (BASMAA), and the Bay Area Clean Water Agencies (BACWA) to support technical efforts to produce identifiable, sustainable water quality improvements in San Francisco Bay. The CEP provides a unique forum for Water Board staff to work closely with stakeholders to address water quality problems through the development of TMDLs (Total Maximum Daily Loads) or other water quality attainment strategies. Through the CEP process, stakeholders review monitoring data, refine key scientific uncertainties, coordinate technical peer review, and develop potential implementation options.

The CEP's mission is to use sound science, adaptive management, and public collaboration to develop and implement technically valid and cost-effective strategies, including TMDLs, which result in identifiable, sustainable water quality improvements in San Francisco Bay. The CEP funds different types of technical studies, including source analysis, impairment assessments, implementation alternatives assessments, and conceptual model development. Conceptual models are an organized presentation of our existing knowledge of pollutant sources, pathways of pollution through the environment, and the physical and biological processes in the ecosystem that produce impairments and mediate the response to management actions. The City contributes financially to the CEP through a BACWA commitment.

Major accomplishments for 2004 include:

A. Stakeholder Interaction Coordination

The CEP applied stakeholder processes and network solutions to seek collaborative agreement to 303(d) listings, and to easing tension and conflict surrounding these regulatory issues:

- Mercury: facilitated multi-stakeholder discussions that produced Basin Plan amendment language reflecting the concerns of all stakeholders,
- PCBs: conducted technical studies to clarify key scientific uncertainties and potential management options,
- Copper/Nickel: conducted technical studies to develop information required for establishing a site-specific water quality objectives north of the Dumbarton Bridge,
- Managed technical work groups for mercury, PCBs, diazinon/toxicity, and copper/nickel, where key technical uncertainties were identified and technical projects designed to fill critical management information gaps.

B. Conceptual Model and Impairment Assessment Reports

The CEP completed development of Conceptual Model and Impairment Assessment reports for selenium, legacy pesticides, diazinon, and dioxin/furans in San Francisco Bay.

C. Public Outreach Efforts

The CEP maintained its web site and document database to provide participants access to documents, links, and other general information about the CEP. The CEP sponsored a technical consultant to aid the environmental community with participation in CEP activities.

COPPER AND NICKEL

Source Identification: Sediment exchange during resuspension; Non-point source loads; Industrial discharges; Residential sources
Effectiveness Measure: Influent and Effluent from the Plant are monitored for upward trends, as is total loading from permitted industrial dischargers.

Influent and Effluent Monitoring CB-13, NB-3

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Monitored influent & effluent Cu and Ni loading at the Plant. See Figures 1-4.	Influent and effluent copper and influent and effluent nickel remained at levels comparable to last five years.	Continue to monitor the Plant's influent and effluent for Cu and Ni.

Copper/Nickel Water Quality Attainment Strategy – Ambient Monitoring Provision E.9

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Completed dry season sampling for dissolved Cu and Ni at 12 monitoring stations in the South Bay. See Figure 5 for ambient monitoring station locations.	No triggers were exceeded for copper and nickel in 2004. No evident trend upward or downward. See Figures 6 and 7 for mean sample results. Summary report is attached in Appendix A.	Continue monthly sampling for Cu and Ni at 12 monitoring stations. Samplings between June and November 2005.

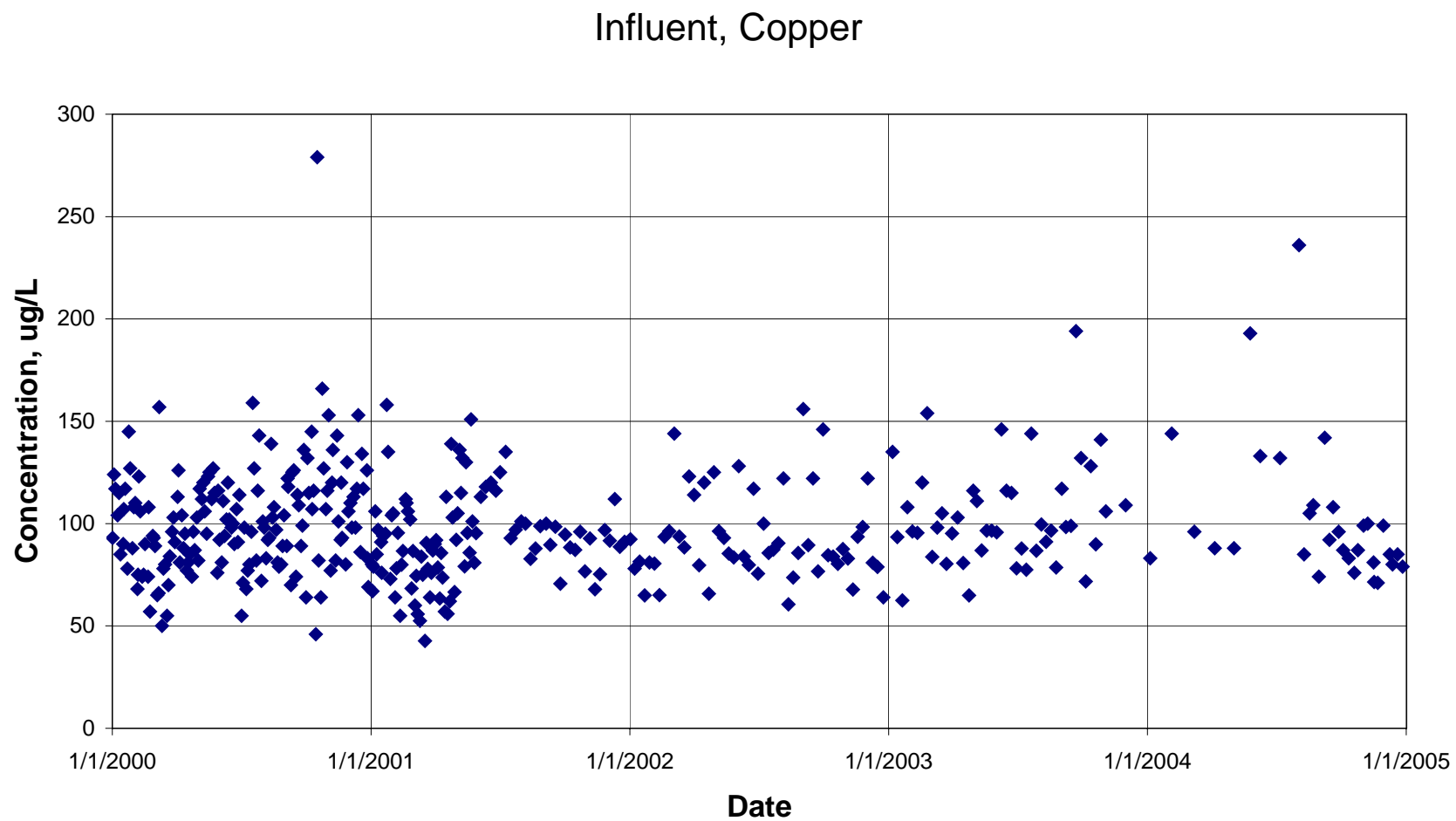
Monitor Industrial Loading CB-13, NB-3 Provision E.9

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Calculated total Cu and Ni loading from all permitted industrial users. See Figures 8-11.	There is an increase in permitted industrial copper and nickel loading to the Plant compared to 2003. Thirty dischargers out of 343 are contributing approximately 85% of the loading.	Reassess the 30 discharger's current pollution prevention measures and require improvements as necessary. Will continue trending analysis at least semiannually.

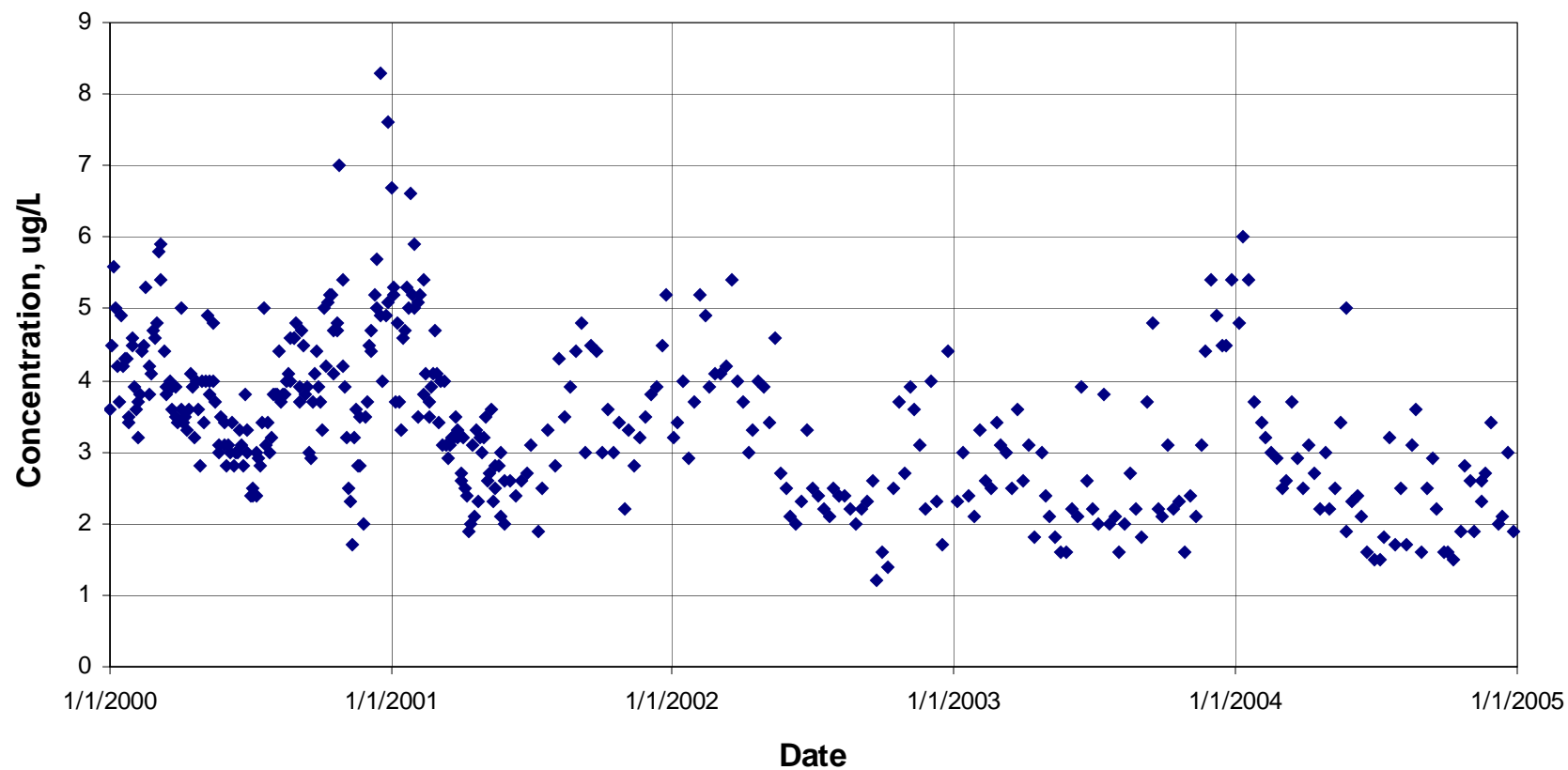
Copper/Nickel Water Quality Attainment Strategies – Action Plan Baselines & South Bay Coordination Provision E.9, CB-13, CB-14, CB-17, CB-19.		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Continued baseline activities for the Copper and Nickel Action Plans Provided significant technical review and presentations on translators and site-specific objectives for the North Bay effort.	Meeting held in April 2004 to discuss Action Plan issues. All Action Plan items have been addressed. Agreed on a format for reporting and tracking of current and past activity in preparation for a bay-wide copper management strategy and simplification of South Bay requirements.	Hold semi-annual stakeholder meetings. Spring – POTW issues, Fall – Stormwater issues. Actively participate in the North Bay TMDL stakeholder process to develop bay-wide Copper and Nickel Action Plans.
Industrial Water Recycling and Efficiency CB-19, NB-6, Provisions E.7.b.(v,vi) and E.7.g.		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Began conversion of a technical Flow Audit Study Protocol document to a guidance document, “Guidelines for Efficient Water Use in Business Operations.”	When document is complete the number of copies distributed to IU’s will be tracked along with any resulting water or copper/nickel reduction projects.	Complete development of “Guidelines for Efficient Water Use in Business Operations” and distribute to IUs.
Completed development of “Guidelines for Industrial Wastewater Reuse.”	The number of copies distributed will be tracked along with any resulting applications for water reuse at industrial facilities.	Market and distribute “Guidelines for Industrial Wastewater Reuse” to SJ businesses.
Completed Industrial User Academy workshop in April 2004.	29 attendees representing 23 IU’s attended the April IU Academy.	Conduct annual Industrial User Academy workshop in April 2005.
Completed Winter 2004 edition of Industrial User (IU) newsletter.	Copies were distributed to all permitted IU’s and also to ESD Watershed Protection Division staff.	Continue to develop and distribute the IU Newsletter. Goal is to complete four newsletters for 2005.

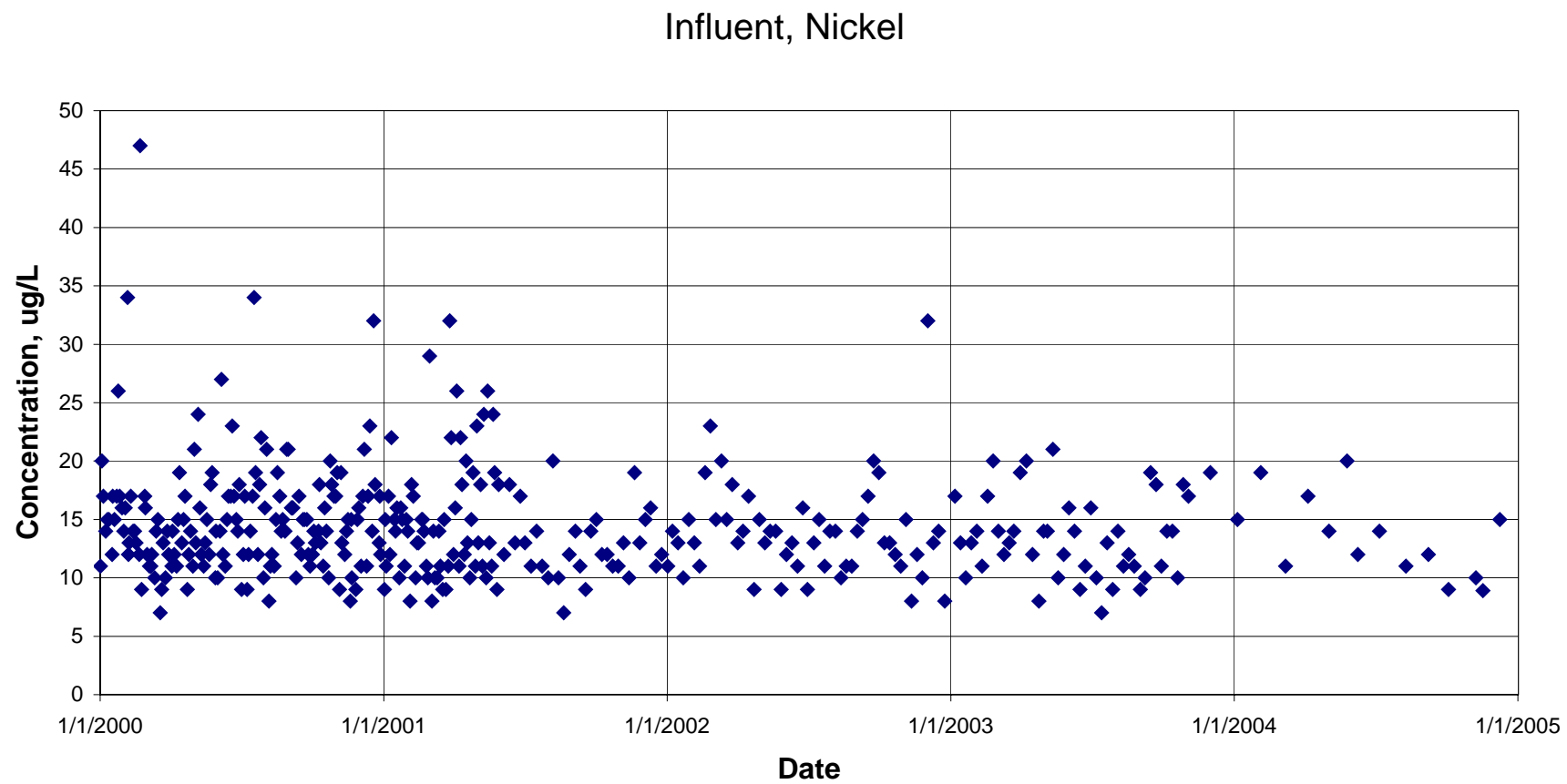
Completed case study for Reaction Technology.		Continue to develop case studies for completed WET projects. Goal is to complete minimum of 1 case study per year.
Completed 7 WET projects, achieving a total water savings of approximately 142,600 gpd. (Projected target was 200,000 gpd.)	Water savings target for 2004 was 200,000 gpd. Reached 71% of target.	Continue to market and provide technical assistance on the WET program. Track 10 active WET applications with an estimated flow reduction of 189,000 gpd. Goal is to achieve a minimum water savings of 100,000 gpd for 2005.
Distributed \$211,948 in financial rebates to completed WET projects.	Rebate distribution target for 2004 was \$300,000. Reached 71% of target.	Continue to distribute financial rebates for successfully completed WET projects.
Reviewed Mass Audit Studies to determine appropriate Mass Equivalent Concentration Limits (MECL) for Headway Technologies and Data Circuits.	Headway Technologies was issued an MECL for nickel and Data Circuits was determined to be a Group 2 company and their Mass Audit Study review was not completed.	Review any Mass Audit Studies submitted by IU's. None are currently under review.
New Industry / Development Review Provision E.7.h.		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Participated in the San Jose Planning Department process. Reviewed and commented on wastewater and recycled water issues for new development applications/projects.	ESD wrote 194 memos with environmental comments on planned projects. 70 memos had comments for SBWR, 7 for Water Efficiency, and 72 for Source Control. 17 Environmental Impact Reports (EIRs) were reviewed.	Continue to participate in the San Jose Planning Department process for new industry/development review.

Impairment Uncertainties CB-17		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Complete study of Phytoplankton species toxicity and prevalence.	This task is complete and was not active in 2004.	None planned.
Regional Outreach to Employees and Public, Provision E.7.b (v, vi)		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Distributed copies of the IU newsletter to Watershed Protection Division personnel of ESD. The newsletter provided information on proper plumbing design and installation practices to reduce copper corrosion.	36 staff members received the IU newsletter.	Continue to include pollution prevention articles in various City-issued newsletters, including the IU, City Line, and ESD Connection newsletters.
Distributed copies of the IU newsletter with the copper corrosion reduction article to all permitted IU's.	343 permitted IU's received the IU newsletter.	Continue to distribute pollution prevention information through the IU newsletter.
Delivered BAPPG's presentation and handed out fact sheets about copper corrosion to American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), the Greater Bay Area Contractors, and 2 plumber's groups.	Survey results were used to improve the presentations.	Continue presentations and further distribution of the fact sheets to installers and designers of copper piping systems.



Effluent, Copper





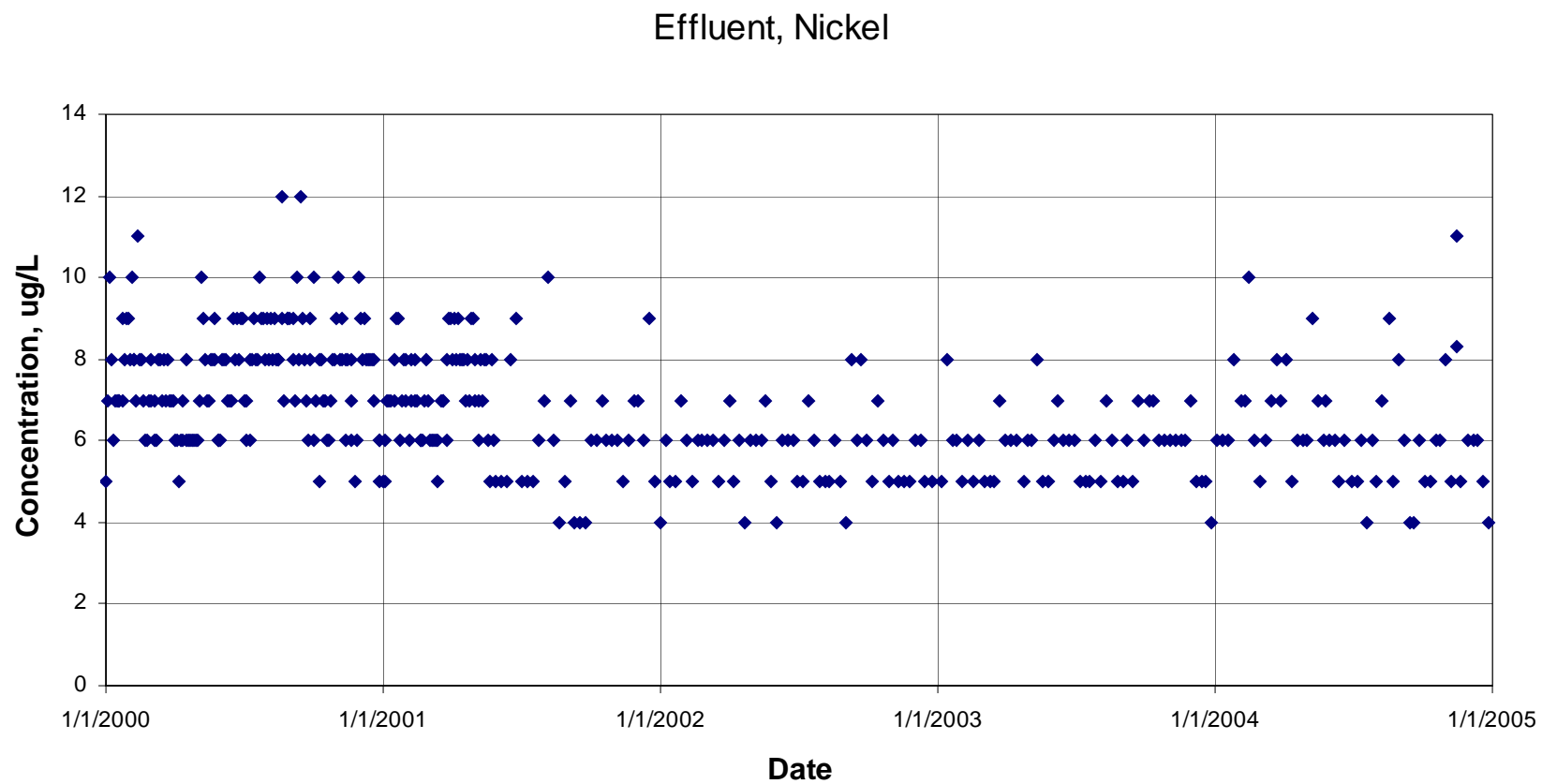


Figure 5 Ambient Monitoring Stations

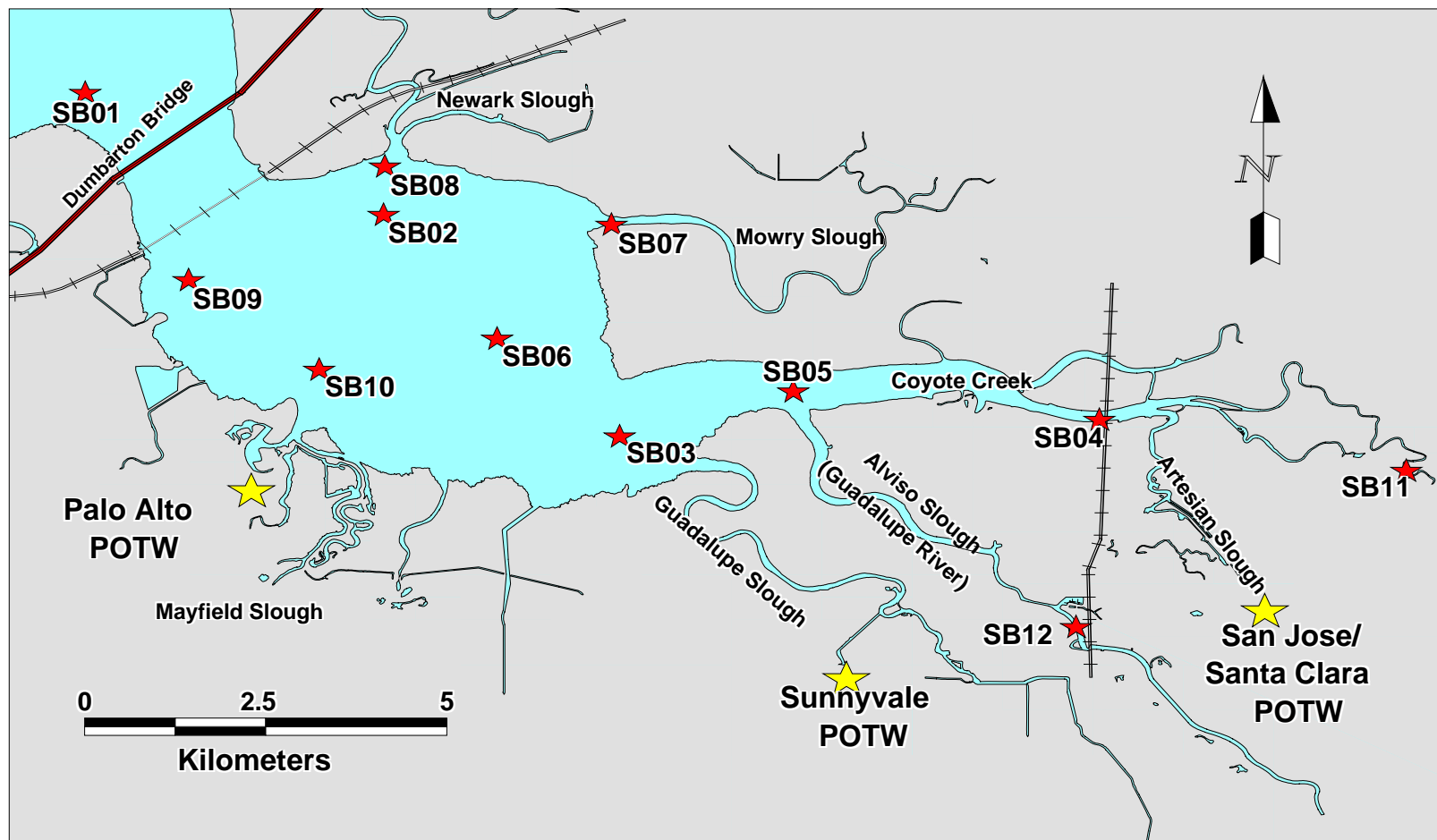


Figure 6

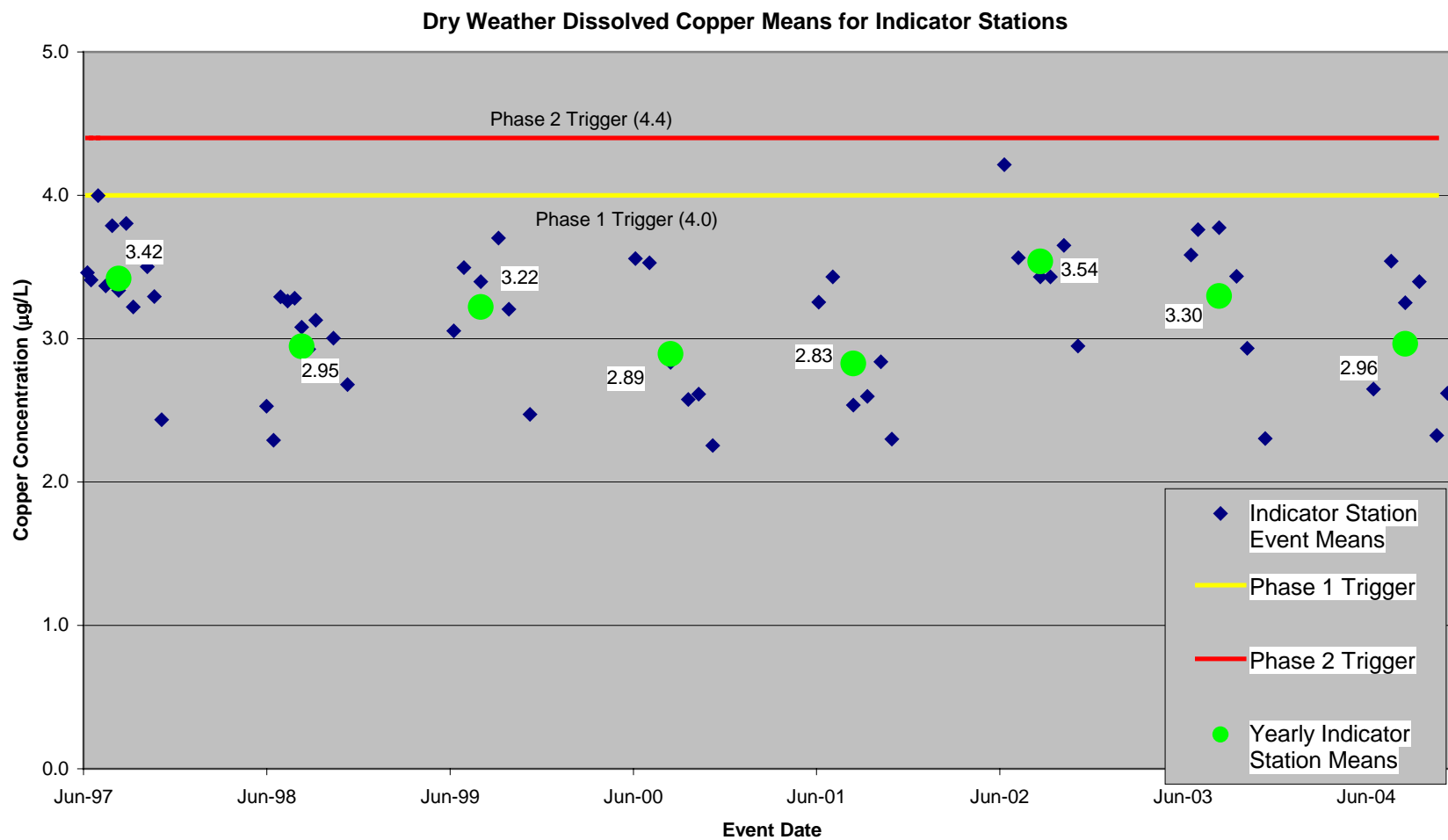


Figure 7

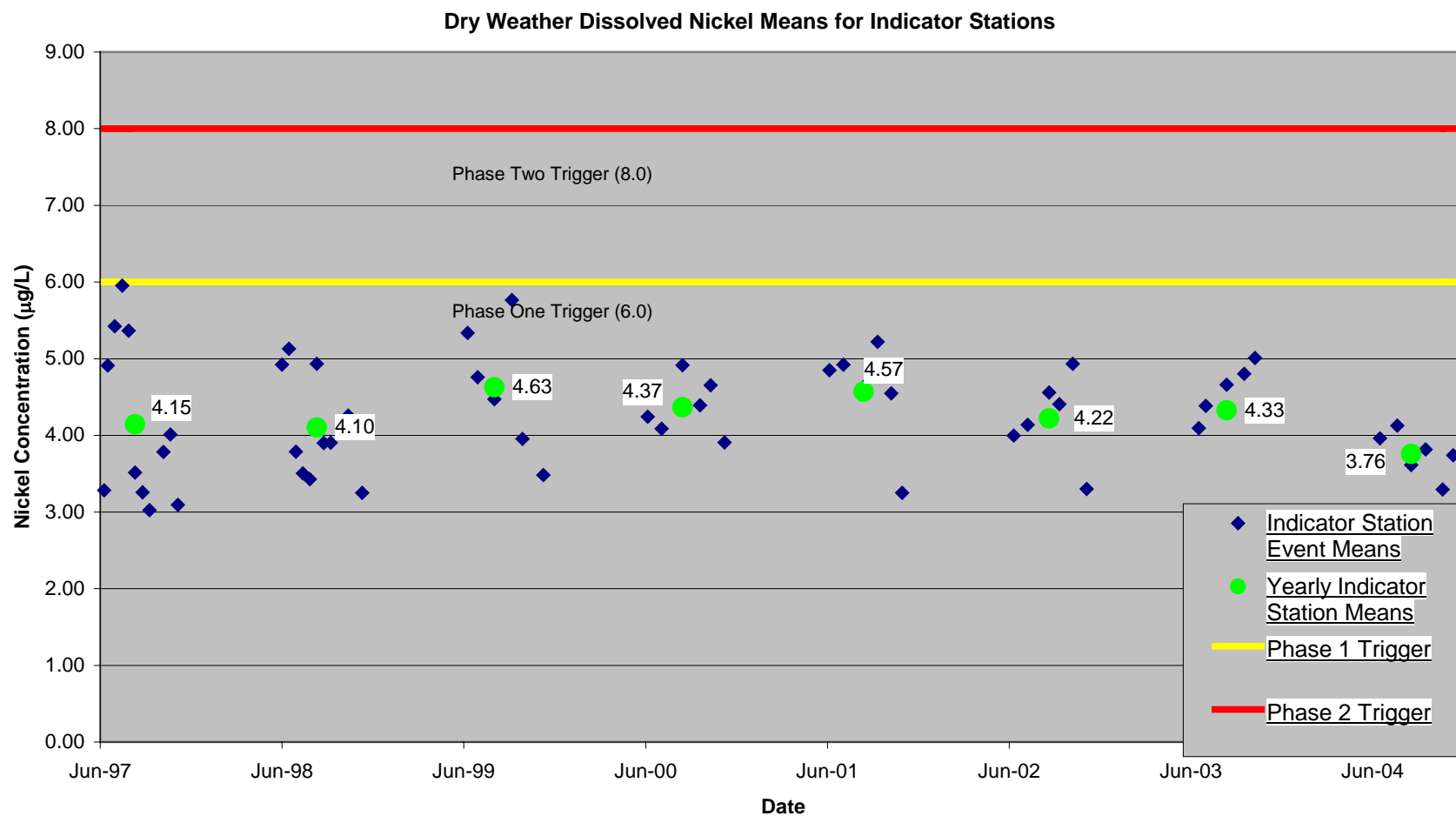


Figure 8 Total Permitted Industrial Copper and Nickel Loading to the Plant

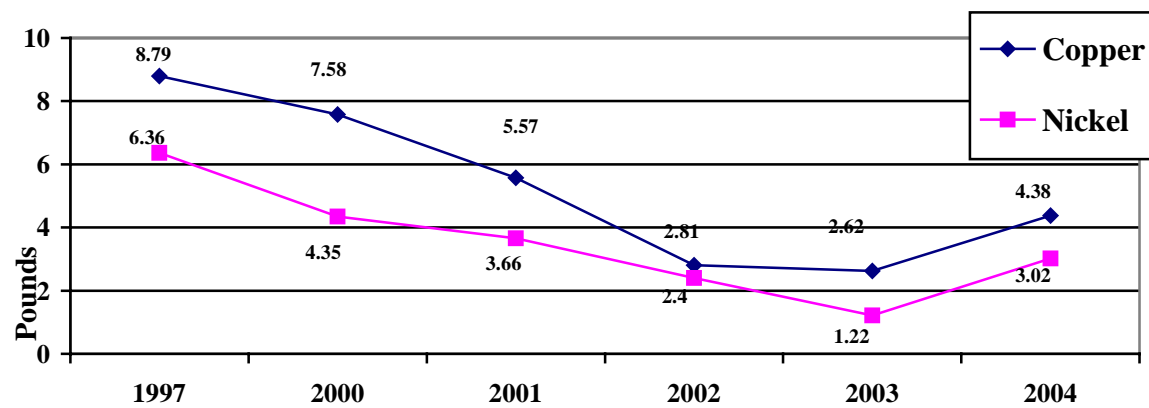


Figure 9 Daily Total Industrial Copper Loading

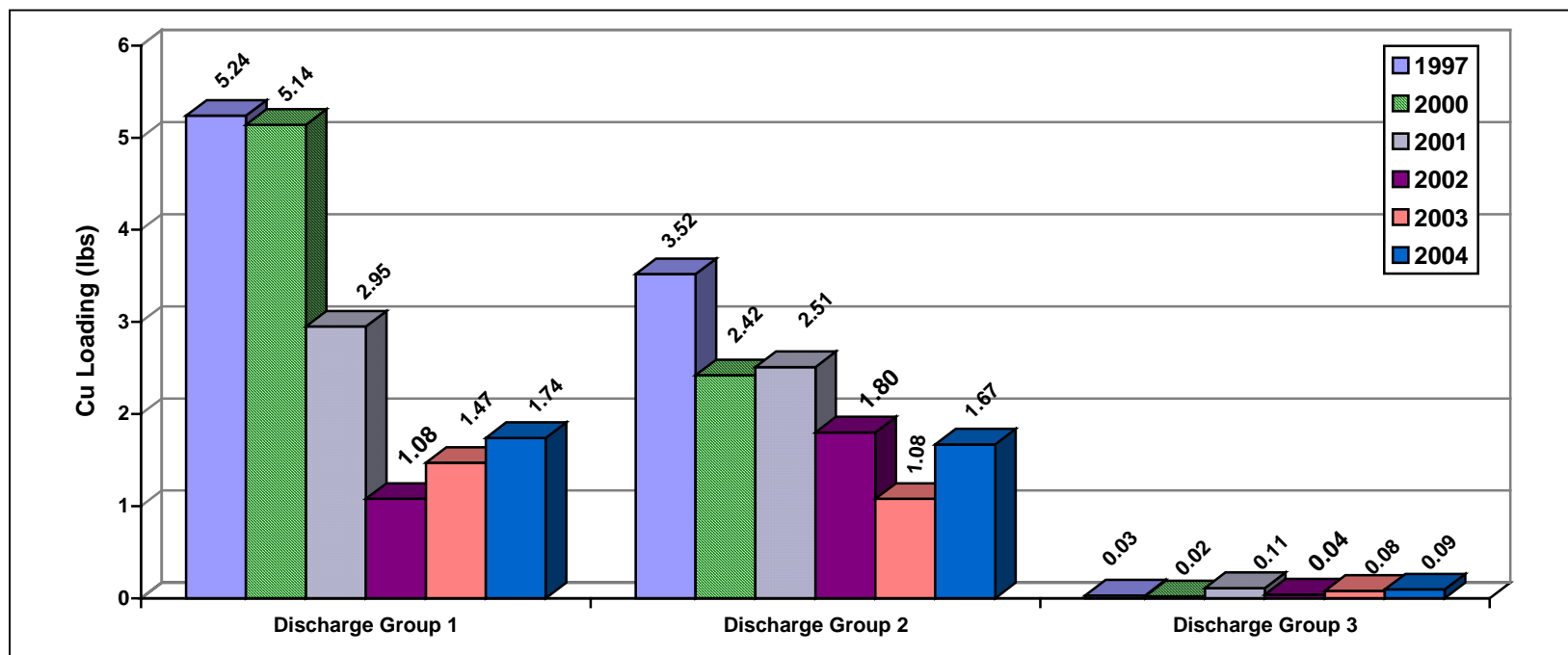


Figure 10 Daily Total Industrial Nickel Loading

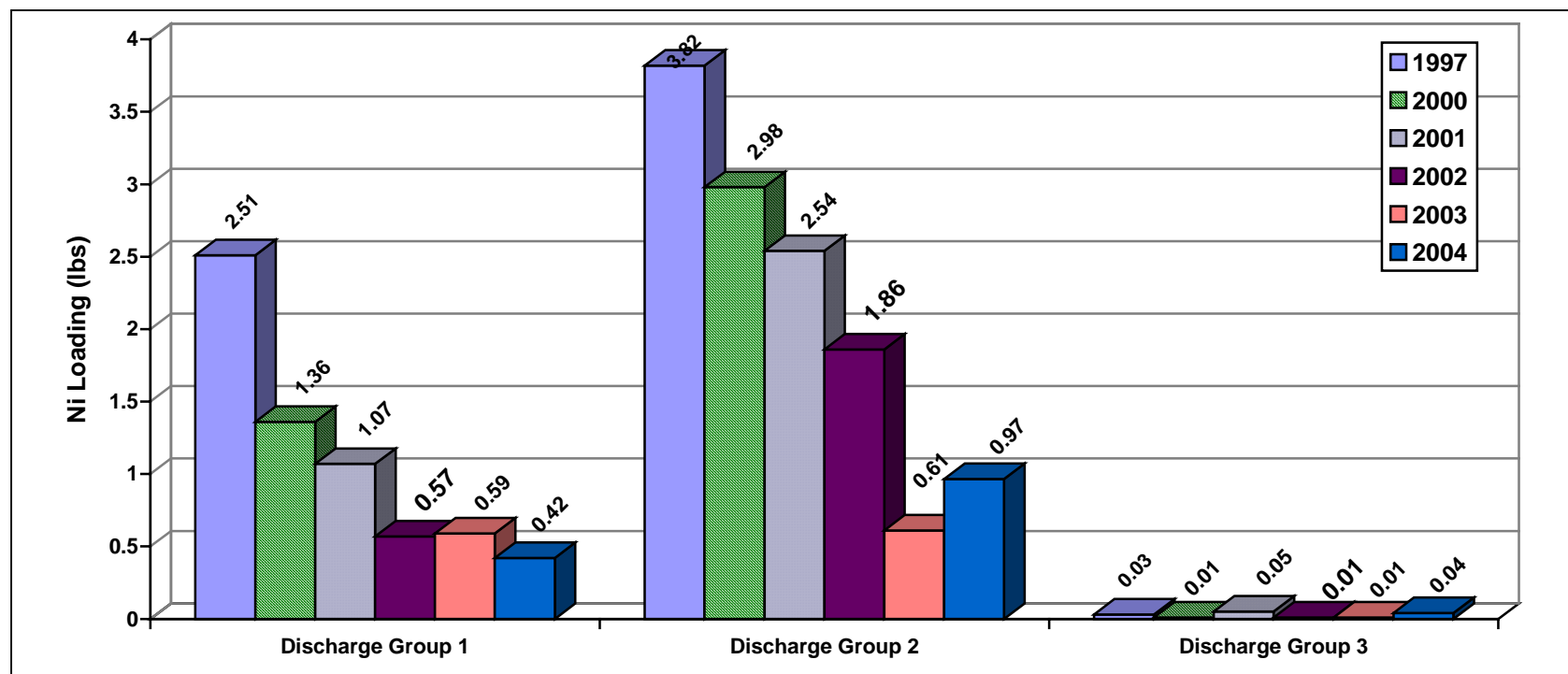
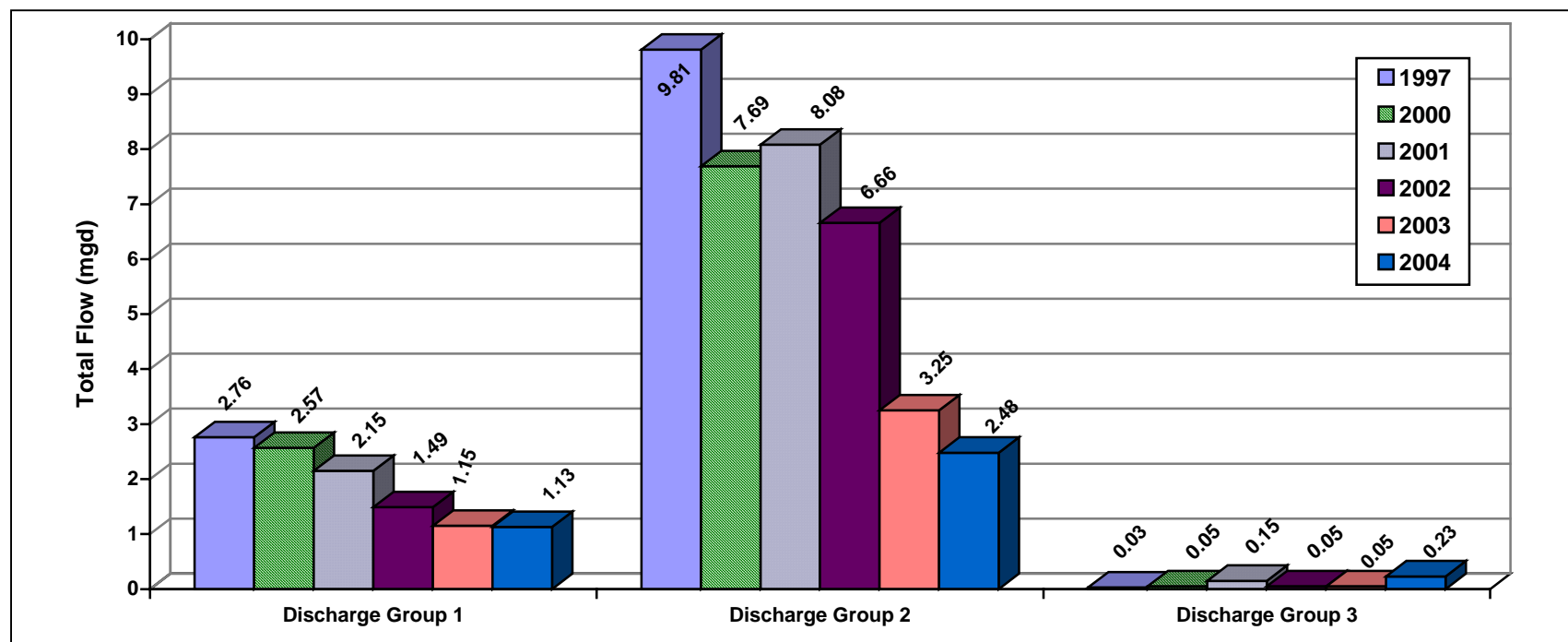


Figure 11 Daily Permitted Dischargers Flows



MERCURY

Source Identification: Hospitals and Dental offices are minor sources. No industrial sources of mercury have been identified in the tributary area. Guadalupe watershed is the largest source of mercury to the South Bay due to runoff from abandoned mercury mines and natural sources.

Effectiveness Measure: Influent and Effluent from the Plant are monitored for trends.

Influent and Effluent Monitoring

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Monitored influent & effluent Hg loading at the Plant. See Figures 12 and 13.	Maximum daily effluent level measured in past 3 years (0.003 ppb) is below monthly average permit limit (0.012 ppb).	Continue to monitor the Plant's influent and effluent for Hg.

Fate and Transport Study Provision E4

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Submitted workplan to the Water Board in January 2004	Track number of workplan activities completed by scheduled date.	Provide Annual Progress Report to Water Board by February 28, 2005 as a CBS Addendum.
Submitted detailed Sampling and Analysis Plan (SAP) to the Water Board in September 2004		
Gave presentation of SAP to the Water Board in November 2004.	Received Water Board approval to begin sampling program based on detailed SAP.	
Began sampling program for Phase I in October 2004.	Conducted weekly sampling and analysis of Plant process waters from mid-October through December 2004. A more detailed description of this task follows the mercury table.	Continue Phase I sampling and evaluate in June 2005. Begin longer term Phase II.

TMDL Participation

Completed Tasks for 2004		
Provided financial support to the Clean Estuary Partnership (CEP). Staff reviewed and commented on proposed CEP documents, including: Mercury TMDL Basin Plan Amendment, and Conceptual Scope of Work for Mercury Adaptive Implementation.	Successful stakeholder process.	Continue to fund and support CEP.
Staff actively participating as member of the Guadalupe River Watershed Mercury TMDL workgroup.	Staff facilitated development and review of a number of Guadalupe River Mercury TMDL workgroup products in support of developing the TMDL.	Continue participation on the Guadalupe TMDL workgroup of the WMI.
RMP Provision E15		
Completed Tasks for 2004		
Contributed financially to the RMP and provided staff support to operate a mercury sampling station as part of the Mercury Atmospheric Deposition Network.		Continue funding RMP.
Dental specific efforts		
Completed Tasks for 2004		
Commented on Water District vacuum system replacement pilot.	Number of dentists adding amalgam separators as a result of this pilot program	Investigate opportunities for outreach to dentists. Contract for Water District pilot was awarded and the marketing plan is under development. Target for the pilot is 20 dental offices county-wide.
Hospital Mercury Elimination Leadership Program (HELP) with DTSC		
Completed Tasks for 2004		

Contacted all hospitals in tributary area to encourage them to either participate in HELP or complete their evaluation if they are already partners.	Amount of mercury reported to DTSC as removed from local hospitals as hazardous waste.	Continue encouraging local hospitals to eliminate mercury containing devices and solutions from their facilities.
Household Hazardous Waste participation		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Sponsored a permanent collection station with bi-monthly collection events for all household hazardous waste materials, including mercury.	9180 City residents participated in the program between July 1, 2003 and June 30, 2004. 60 pounds of metallic mercury and 11,878 pounds of mercury containing fluorescent bulbs were collected county-wide.	Continue to fund household hazardous collection events at current level.
Regional Outreach to Employees and Public, Provision E7b(v),(vi)		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Distributed article describing opportunities for recycling of mercury thermometers and fluorescent bulbs to all ESD staff in a department newsletter. An article emphasizing personal responsibility of residents and businesses for pollution prevention was distributed to all City employees through the employee newsletter.		An article will be included in each of the quarterly ESD newsletters describing watershed issues. Additional articles are planned for the City newsletter.
Participated in BAPPG and BACWA efforts to reduce discharge of mercury from residential and medical sources. Spanish radio, television commercials, and internet	Outreach through Spanish radio was effective and will continue. Use of internet for outreach to Spanish speaking audience was not effective and will not continue.	Continue to fund and actively participate in BAPPG and BACWA to use a regional approach to mercury pollution prevention. Participate with Santa Clara County on a

pages were used to publicize proper disposal of old thermometers and other products containing mercury.		grant received to target mercury reduction.
Participated in the development of Pollution Prevention Menus (P2 Menus) through BAPPG.		Continue to participate in the implementation phase of the P2 Menus.

MERCURY FATE AND TRANSPORT STUDY PROGRESS REPORT

On January 13, 2004, in compliance with Permit CA0037842, order No. R2 2003-0085, provision E.4.a, the City of San Jose submitted a Workplan to study the fate and transport of mercury in the San Jose/Santa Clara Water Pollution Control Plant. On July 8, 2004, the Regional Board responded to that submittal with a letter of conditional acceptance, contingent on certain modifications to the plan and the production, within 60 days, of a detailed Sampling and Analysis Plan (SAP). The detailed SAP was submitted on time. While keeping an adaptive approach, the SAP describes how representative samples will be collected from all potential pathways for mercury removal. It also describes the analytical methods to be used.

Sampling of all relevant treatment streams for total, dissolved, and methyl mercury and ancillary factors began in October. Initial results seem to confirm earlier preliminary studies that indicated that the Plant's total and methyl mercury removal rates are in excess of 95%. Interlaboratory comparisons with outside contract laboratories so far demonstrate excellent performance by the San Jose Environmental Services Laboratory for ultra trace level analyses of mercury and methyl mercury in complex wastewater and sludge matrices. The first phase sampling will continue weekly through June 2005, at which point subsequent sampling will be optimized to evaluate longer-term trends.

Figure 12

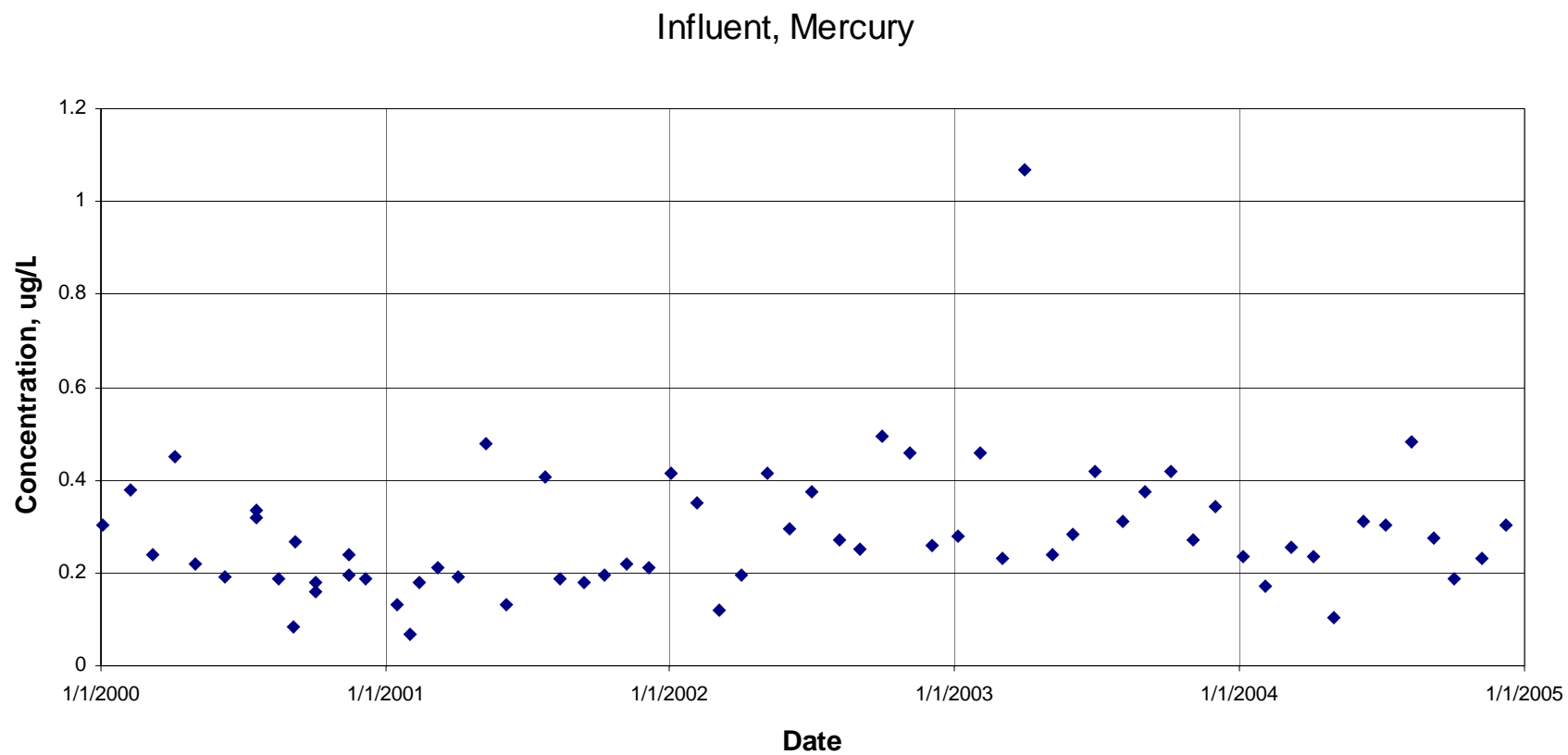
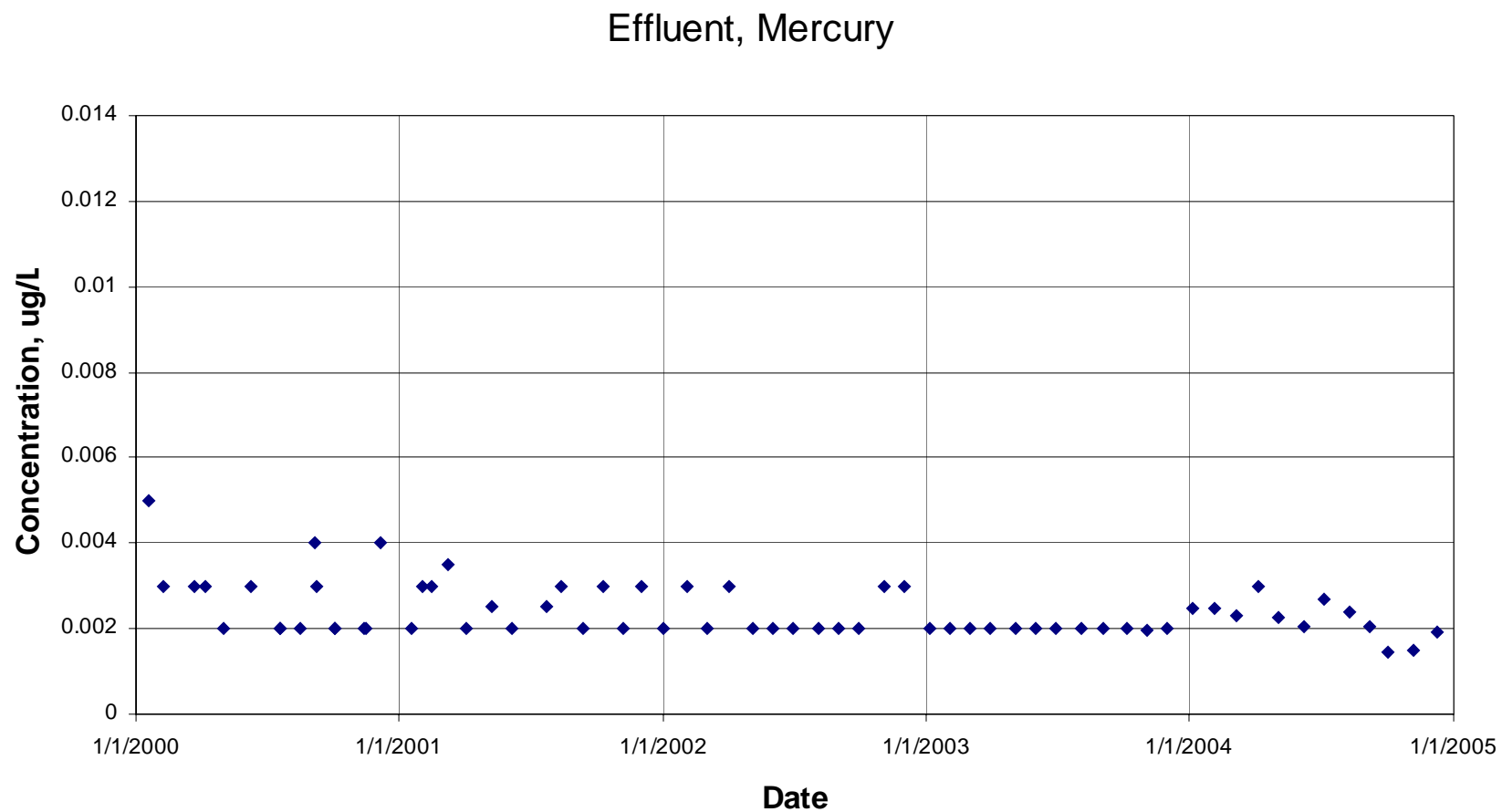


Figure 13



ORGANICS

Source Identification: Pesticides enter the sanitary sewer system through cleaning of spray equipment and inappropriate disposal of excess product. Pesticides enter the storm sewer system through runoff from inappropriate and excessive application. Some of the organics listed as pollutants of concern are legacy pollutants that may not have current sources

Effectiveness Measure: Concentrations in the Plant influent, Plant effluent, and South Bay background are monitored.

Influent and Effluent Monitoring

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
All sample results for pollutants of concern were below detection limit.		Sampling will continue.

Aldrin Laboratory Reliability Study Provision E3

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Task was completed and reported in 2004 CBS.		None planned.

Household Hazardous Waste

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
The City participates in the Santa Clara County Household Hazardous Waste program informing residents of opportunities within the Plant service area to drop off household hazardous waste.	9,180 households in San José disposed of hazardous waste through this program in FY 2004 at a permanent facility in San José.	Continue to fund the operation of a permanent drop off station in San José.

Outreach to Employees and Public		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
An article was distributed to all City employees on prevention of pesticide pollution.		Articles will continue on Watershed Watch issues in the quarterly Environmental Services Department newsletter and the City-wide newsletter.
Participated in BASMAA/BACWA efforts to reduce discharge of pesticides through BAPPG. Outreach targets residential sources and promotes the use of less toxic pest controls and proper disposal of pesticides.		The City plans to conduct a survey of stores selling pesticides to determine the type and quantity of pesticides stocked.
A grant to Santa Clara County was used to target neighborhoods with low participation in the Household Hazardous Waste program with door hangers and other outreach materials about pesticides, and to provide information on the diazinon ban.	A significant rise in diazinon drop off through the Household Hazardous Waste program was observed.	
The City participated in the BAPPG rewrite of the "Control It" pesticide alternative BMP.		
The City participated in the Watershed Watch campaign to deliver pollution prevention messages, including use of less toxic alternatives to pesticides, to residents of the Santa Clara Valley.		Continue to support Watershed Watch program.

CYANIDE

Source Identification: Industrial plating operations, medical facilities, Plant processes

Effectiveness Measure: Concentrations in the Plant influent, Plant effluent, and South Bay background are monitored.

Influent and Effluent Monitoring**Completed Tasks for 2004**

Sampled Plant influent and effluent for cyanide monthly.

Effectiveness Evaluation/Comments

Compare results of sampling to past years' results. Source Control is investigating spikes seen in May and November 2004.

Future Tasks for 2005

Continue to monitor Plant influent and effluent for cyanide.

Attenuation Study**Completed Tasks for 2004**

The City's Cyanide Attenuation Study was completed September 1, 2004. The study collected cyanide data from Plant receiving waters to develop an attenuation factor that could be incorporated, along with cyanide data from other BACWA shallow-water dischargers and the proposed site-specific objective of 2.9 ppb, into a Basin Plan Amendment for cyanide.

Effectiveness Evaluation/Comments

Provide data to the Water Board to support a site-specific objective that applies to shallow water dischargers.
A more detailed description of this task follows the cyanide table.

Future Tasks for 2005

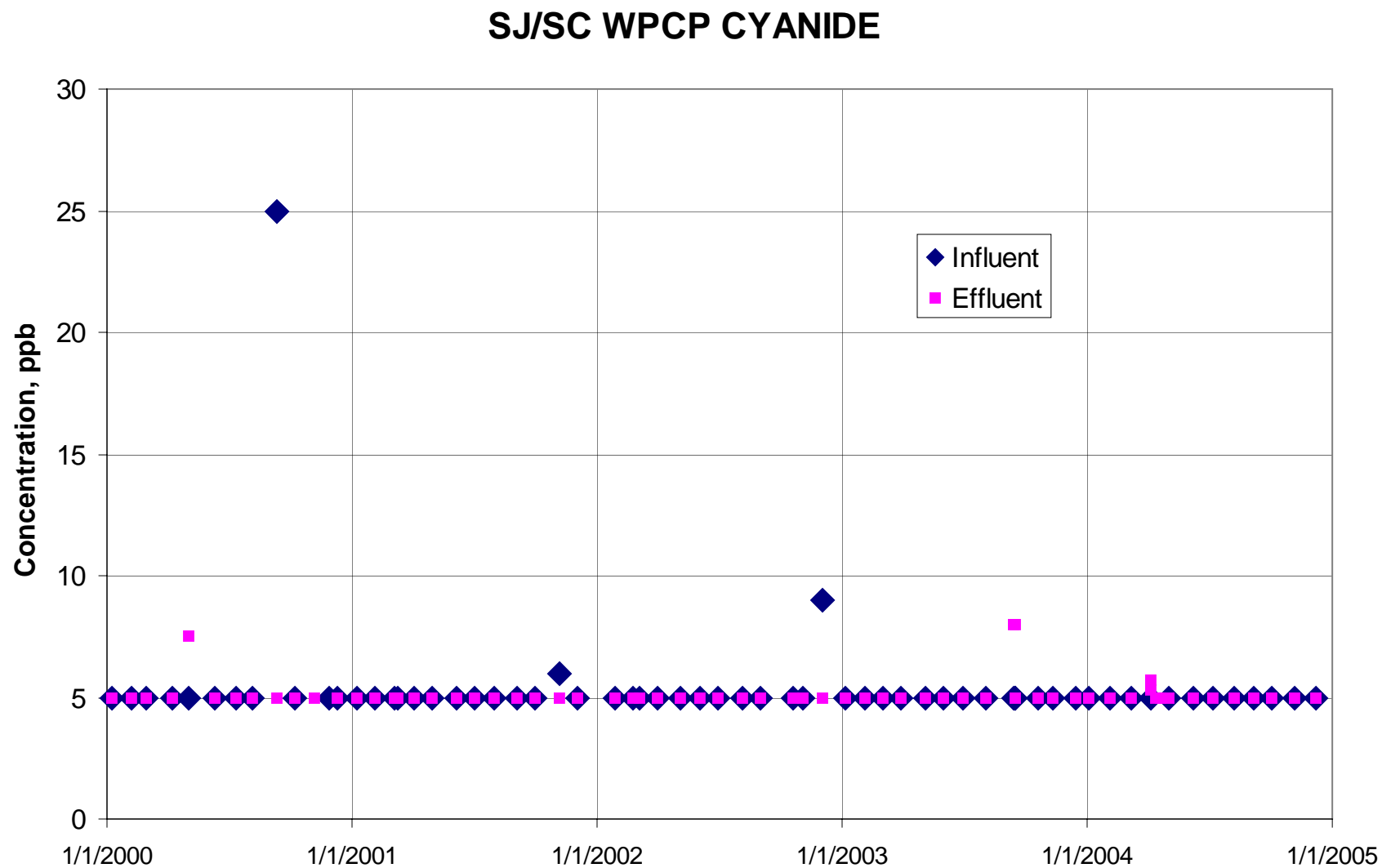
1. Continue to collect cyanide samples from the Plant discharge and at 15 stations in the receiving waters through February 2005. Continue to analyze these samples using trace-level detection methods.
2. Continue active participation in the BACWA shallow water's cyanide subgroup to equitably resolve regulatory issues.

Pollution Prevention		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Industrial Wastewater Discharge Permit Application was updated to require a description of pollution prevention practices. This information is reviewed and verified as part of the permit inspection. This review is done on the five year permit cycle.		
Industrial Monitoring		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Industrial Users with significant cyanide sources were identified and inspection and sampling of these facilities has increased.	Ensure that all Industrial Users with significant cyanide uses are in compliance with cyanide discharge and disposal practices. Identify Industrial Users illegally discharging cyanide wastewater into the sewer system.	Continue to sample those Industrial Users that show elevated cyanide dischargers and take enforcement measures as appropriate.

SHALLOW WATER DISCHARGER SPECIAL STUDY FOR CYANIDE

The California Toxics Rule (CTR) promulgated in 2000, set the state-wide cyanide limit at 1.0 ppb, causing potential compliance issues for Bay-area dischargers. In 2002, the Water Board proposed a cyanide site-specific objective of 2.9 ppb for San Francisco Bay based on toxicity studies performed on Cancer crab species in Puget Sound that were applicable to San Francisco Bay (Bay). However, some shallow-water dischargers, including the San Jose/Santa Clara Water Pollution Control Plant, would still face compliance issues. Since, 2003, the City has participated in a Bay-wide, Shallow-Water Discharger Workgroup to address the cyanide compliance issue by performing ambient monitoring of cyanide attenuation in the receiving water to arrive at a scientifically based resolution. Cyanide does not appear to persist in the Bay therefore development of an Attenuation Factor is a reasonable compliance strategy. An Attenuation Factor would “translate” ambient total cyanide concentrations to an NPDES Permit limit for dischargers.

The City conducted a Cyanide Attenuation Study from July 2003 to June 2004. This involved monthly (or more often) treatment Plant and ambient monitoring for total cyanide at 15 stations in Artesian Slough, Coyote Creek, and South Bay. The ESD Laboratory developed trace analytical techniques in order to measure cyanide at or below the CTR cyanide criterion of 1.0 ppb. ESD Watershed Investigations and Laboratory staff released a final report entitled *Cyanide Attenuation Study* on September 1, 2004. This report is available online at http://www.sanjoec.ca.gov/esd/pub_res.htm. The study demonstrated cyanide concentrations attenuating in the receiving water with increasing distance downstream from the Plant and background concentrations of cyanide in the Bay are 0.5 ppb or less.



FATS, OIL, AND GREASE

Source Identification: Restaurants, commercial food services, residential cooking

Effectiveness Measure: Number of blockages and overflows caused by grease build-up is monitored by Department of Transportation, amount of grease removed at Plant headworks

Inspect Restaurants and Food Service Facilities for proper maintenance of Grease Removal Device

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Inspected 1,108 restaurants and other food service facilities in San Jose (this total is for period 7/01/03-6/30/04).	Number of Areas of Concern found at restaurants will be compared at re-inspection to prior inspections.	Continue to inspect San Jose restaurants, with frequency of inspection determined by compliance with regulations.

Perform Plan Checks to determine proper Grease Removal Device Size

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Conducted 208 restaurant and other food service facility plan checks to determine proper grease removal device sizing.		Continue to conduct plan checks for grease removal device sizing tributary area wide

Investigation of grease blockages or reported hot spots

Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Inspected 62 restaurants as a result of 19 complaints from sewer crews of grease blockages or buildup of grease in sewer lines. Inspected 5 automotive facilities as a result of complaints from sewer crews of motor oil in sewer lines.	Number of investigations will be tracked annually and compared to previous years. 2004 will be used as the baseline year.	Continue to investigate complaints as they are received.

Participate on Regional FOG groups		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Staff attended and instructed at EPA FOG workshop. City staff chaired the CWEA I&HW Committee grease sub-committee. City staff participated in CALFOG and BACWA Collection Committee grease reduction efforts.	Workshops are heavily attended. Associations are cooperating to develop regional outreach materials.	Continue participation in CWEA and BACWA.
Complete FOG section of Sewer System Management Plan		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
San Jose is preparing a Sewer System Management Plan (SSMP) that will be required by the Water Board in 2005 that includes FOG controls as well as other sanitary sewer overflow control measures.	Effectiveness measures will be developed as part of the SSMP.	Complete the FOG section and report progress annually to Water Board
Outreach to employees and public		
Completed Tasks for 2004	Effectiveness Evaluation/Comments	Future Tasks for 2005
Door hangers are distributed with FOG reduction techniques to residences in areas identified as high producers of grease.	Rate of grease build-up is monitored by collection system cities and agencies.	Produce new BMP's for restaurants. Changes in build-up of grease throughout the sewer system will be monitored as part of the SSMPs throughout the Plant's service area.
The City is developing a restaurant "packet" to coordinate delivery of wastewater and stormwater messages to this audience.	Track number distributed.	Print and begin distribution of the restaurant packet.

The City participated in developing and delivering grease related messages for Hispanic audiences, and is participating in development of a multilingual food handling poster for restaurant grease through BAPPG.		Continue grease related messages to Hispanic audiences.
The City participated in developing and delivering grease related messages through the Regional Media Relations workgroup.		Continue current efforts.

APPENDIX A

SOUTH BAY MONITORING PROGRAM 2004 PROGRESS REPORT

Study will be available on the following website: <http://www.san Joseca.gov/esd>

Environmental Services
Department

**South Bay Monitoring Program
2004 Progress Report
January, 2005**

Program History

In February 1997, the City of San Jose began measuring total and dissolved copper and nickel concentrations at ten stations in the Lower South San Francisco Bay (LSSB). In October 1997, two fresh water stations were added, one each in the lower reaches of Coyote Creek and the Guadalupe River, bringing the total number of stations to twelve (Figure 1). Samples were taken in triplicate twice monthly until October 1998, at which time sampling frequency was reduced to monthly, with quarterly triplication. In 2001, triplication was ceased and single monthly samples have been collected since. To date, the City of San Jose has conducted over one hundred sampling events and analyzed over 2000 water samples for total and dissolved copper and nickel.

In 2003, the sampling designs prescribed by the Copper and Nickel Action Plans resulting from the South Bay TMDL Program were incorporated into the San Jose/Santa Clara Water Pollution Control Plant's reissued NPDES permit (order number R2 2003-0085) as Provision E.9. Ten locations in South San Francisco Bay are monitored to compare mean dry season dissolved copper and nickel concentrations to respective trigger levels. For dissolved copper, Phase I and II trigger levels are 4.0 and 4.4 parts per billion, respectively. For dissolved nickel, the corresponding trigger levels are 6.0 and 8.0 parts per billion. Indicator stations for copper monitoring are SB03, SB04, SB05, SB07, SB08, and SB09. Indicator stations for nickel monitoring are SB03, SB06, SB07, SB08, SB09, and SB10. Continued sampling at SB01, SB02, SB11, and SB12, and wet season sampling are undertaken to facilitate future power analyses and periodic evaluation of monitoring program performance. Figure 1 shows the station locations for the program.

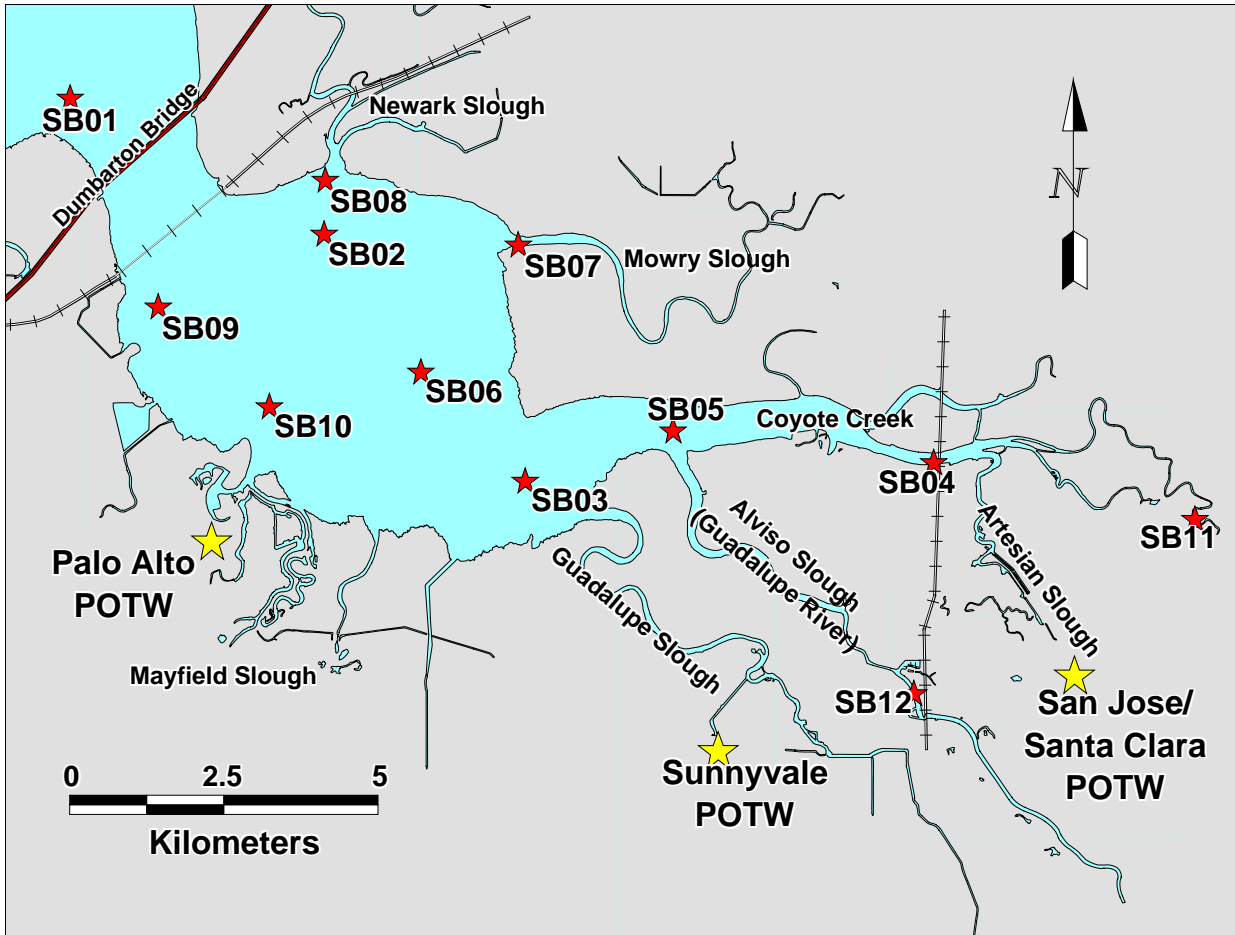
2004 Monitoring Highlights

Dissolved copper and nickel concentrations in the LSSB have remained remarkably constant since 1997. No distinct trend is evident in the yearly mean concentration values, however the trend of increase or decrease has been consistent between copper and nickel. This tendency corresponds with smaller scale correlation between event concentration means over wet and dry seasons (Figure 2). In over eight years of monitoring, dry weather indicator station means for copper and nickel have varied less than 0.5 ppb around their respective grand means of 3.14 (Figure 3) and 4.27 ppb (Figure 4). Seasonal indicator means for copper range from 2.83 to 3.54 ppb. Seasonal indicator means for nickel range from 4.10 to 4.63 ppb. Summary statistics for individual monitoring stations over the entire study, including wet seasons, are shown in Tables 1 & 2.

No anomalous occurrences occurred in sampling or analysis during the 2004 sampling events. Although differences between years are relatively small, the 2004 dry season indicator mean for dissolved Nickel was the lowest measured over the entire eight years of study. Although not the

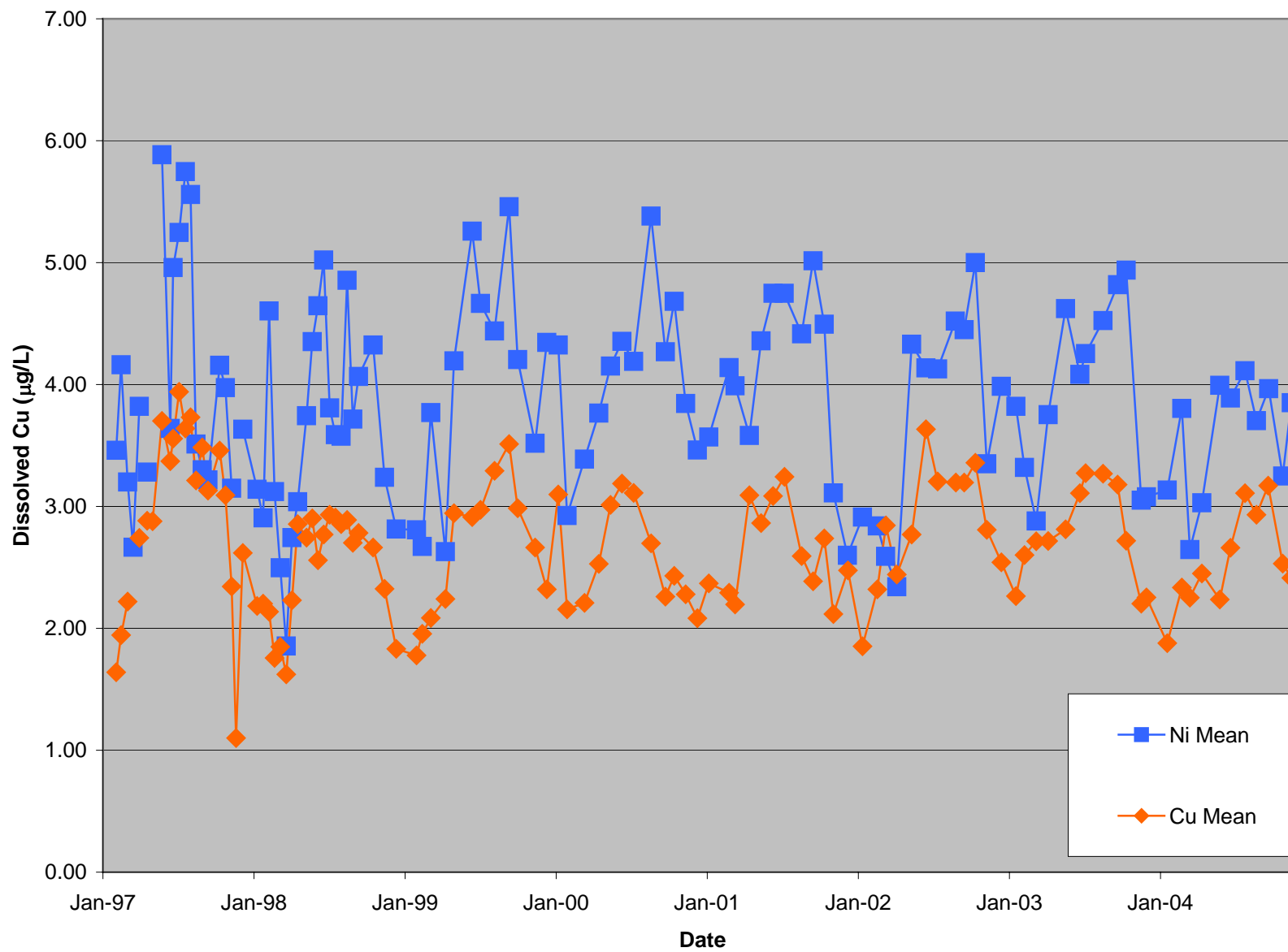
lowest seen throughout the study, the 2004 indicator mean for copper was relatively lower than the previous two years. At present, no causes for these small decreases are evident.

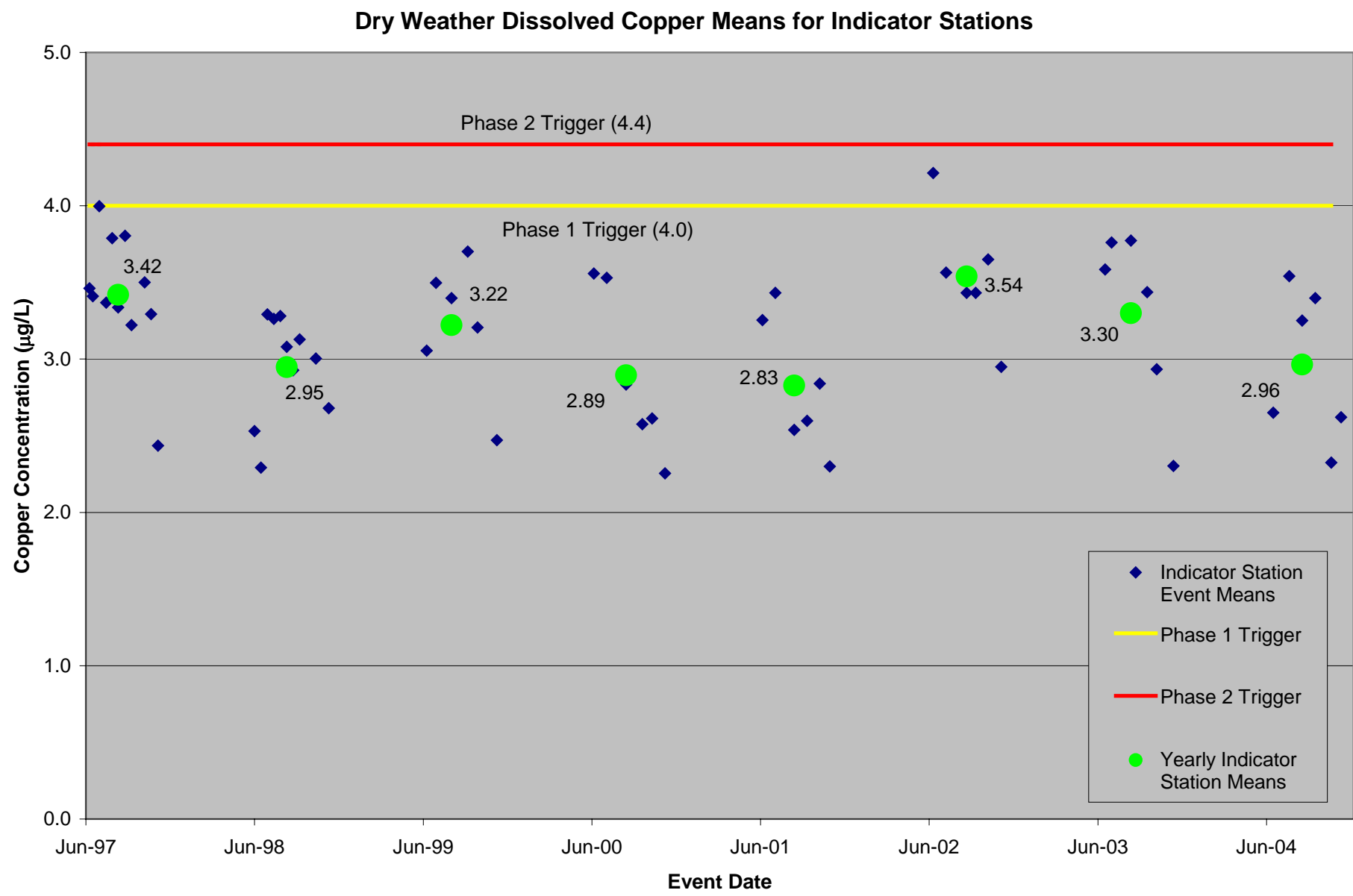
Figure 1. South Bay Monitoring Stations



SITE	LAT	LON
SB01	37° 30.782'	122° 8.036'
SB02	37° 29.595'	122° 5.243'
SB03	37° 27.437'	122° 3.033'
SB04	37° 27.600'	121° 58.540'
SB05	37° 27.875'	122° 1.406'
SB06	37° 28.390'	122° 4.180'
SB07	37° 29.499'	122° 3.110'
SB08	37° 30.066'	122° 5.231'
SB09	37° 28.959'	122° 7.068'
SB10	37° 28.087'	122° 5.846'
SB11	37° 27.150'	121° 55.501'
SB12	37° 25.574'	121° 58.778'

Figure 2. Cu and Ni Event Means





Dry Weather Dissolved Nickel Means for Indicator Stations

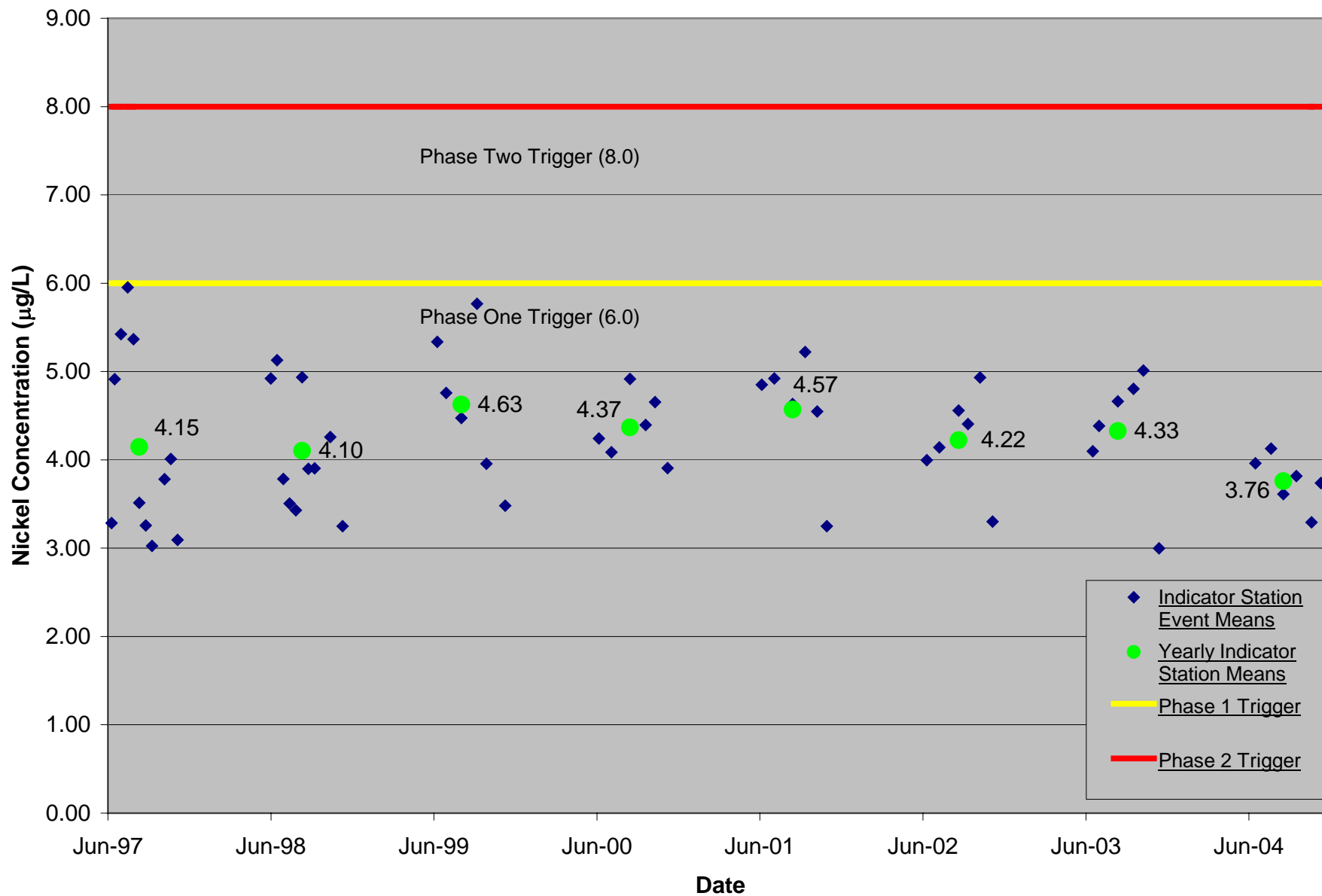


Table 1. Dissolved copper summary statistics for all stations and seasons 1997 - 2004

<i>Station</i>	SB01	SB02	SB03	SB04	SB05	SB06	SB07	SB08	SB09	SB10	SB11	SB12	GRAND
Mean	2.65	2.80	2.89	2.58	2.83	2.95	2.92	2.94	2.98	3.13	1.72	1.53	2.68
SE	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.08	0.07	0.10	0.03
MIN	1.41	1.51	1.26	1.10	1.54	1.23	1.49	1.50	1.52	1.60	0.90	0.70	0.70
MAX	4.07	4.63	4.13	4.26	4.67	4.33	5.54	4.42	5.07	4.75	3.73	6.75	6.75
n	108	106	106	105	106	106	107	108	108	107	95	96	1150

Table 2. Dissolved nickel summary statistics for all stations and seasons 1997 - 2004

<i>Station</i>	SB01	SB02	SB03	SB04	SB05	SB06	SB07	SB08	SB09	SB10	SB11	SB12	GRAND
Mean	2.80	3.19	3.83	5.90	4.71	3.60	4.22	3.51	3.32	3.60	3.60	3.55	3.92
SE	0.05	0.08	0.09	0.16	0.14	0.10	0.13	0.08	0.07	0.08	0.16	0.14	0.04
MIN	1.54	1.58	1.80	2.35	1.74	1.56	2.24	1.74	1.70	1.87	1.78	1.35	1.35
MAX	3.81	5.29	6.59	13.37	7.97	6.59	10.10	5.97	5.72	6.09	8.62	9.62	13.37
n	104	105	104	107	105	106	104	105	106	102	91	92	1127

ADDENDUM

MERCURY FATE AND TRANSPORT STUDY ANNUAL REPORT

Study will be available on the following website: <http://www.san Joseca.gov/esd>

**SJ/SC WPCP Mercury Fate And Transport Study Progress Report
February 28, 2005**

Introduction

On January 13, 2004, in compliance with Permit CA0037842, order No. R2 2003-0085, provision E.4.a, the City of San Jose submitted a workplan to study the fate and transport of mercury in the San Jose/Santa Clara Water Pollution Control Plant (Plant). On July 8, 2004, the Water Board responded to that submittal with a letter of conditional acceptance, contingent on certain modifications to the plan and the production within 60 days of a detailed Sampling and Analysis Plan (SAP). The detailed SAP was submitted within the allotted time frame. While keeping an adaptive approach, the SAP describes where, when, and to what extent samples will be collected, and the analytical methods to be used. It also describes how representative samples will be collected from potential pathways for mercury removal.

As described in the SAP, sampling of relevant treatment streams for total, dissolved, and methyl mercury and ancillary parameters began in October, 2004. Results to date show patterns similar to earlier preliminary studies demonstrating total and methyl mercury removal efficiency in excess of 95%. Interlaboratory comparisons with outside contract laboratories have been done, demonstrating sound performance of the San Jose Environmental Services Laboratory for ultra trace levels of mercury and methyl mercury in complex wastewater and sludge matrices. Although some minor modifications may be made as described later in this document, Phase I sampling will continue weekly through June 2005, at which point subsequent sampling will be optimized to evaluate longer-term trends.

Sampling Highlights:

Although the original intent of the sampling plan was to accomplish some dry season sampling in the early weeks of the project, early rains were experienced in October and November, 2004. However, in the following weeks, samples were collected under nearly every environmental condition except prolonged warm, dry weather.

On each sampling date, Plant flow data have been collected for later comparison to sample results and times in order to examine whether flow parameters might affect mercury processes. Although internal flows are not routinely measured with high-precision instruments, measurements are of high enough quality to determine relative magnitudes of internal flows so that differing process conditions can be easily compared. Influent and effluent flows are measured very accurately, and are the best measurements to characterize overall flow conditions.

To date, City Staff have used ultra-clean sampling and analysis techniques to collect and analyze over 140 aqueous samples for total, total methyl, and dissolved mercury and

parallel samples for TSS, sulfide, chloride and sulfate. Thirty-two sludge samples have been collected for total mercury, methylmercury, and total solids. On each sampling date, a suite of blanks have been collected to document avoidance of cross-contamination and to ensure the cleanliness of sample bottles, filters, and apparatus. Blanks have shown that cleaning, sampling, and analysis techniques have effectively delivered uncontaminated, accurate samples.

Preliminary results of Phase I sampling:

Phase I sampling began October 13, 2004. As prescribed in the SAP, samples have been collected weekly at 8 process locations: Raw Sewage (RS), Primary Effluent (PE), Settled Sewage (SS), Nitrification Effluent (NE), Secondary Effluent (SE), Tertiary Filter Influent (FI), Tertiary Filter Effluent (TFE), and Final Effluent, (FE). Also in Phase I, monthly sludge samples were collected from Primary Sludge (PS), Nitrification - Waste Nitrification Sludge (WNS), Secondary - Waste Activated Sludge (WAS), Thickened Activated Sludge (TAS), Digester Sludge (DS), and Lagoon Sludge (SL) sources. Table 1 describes these sample types.

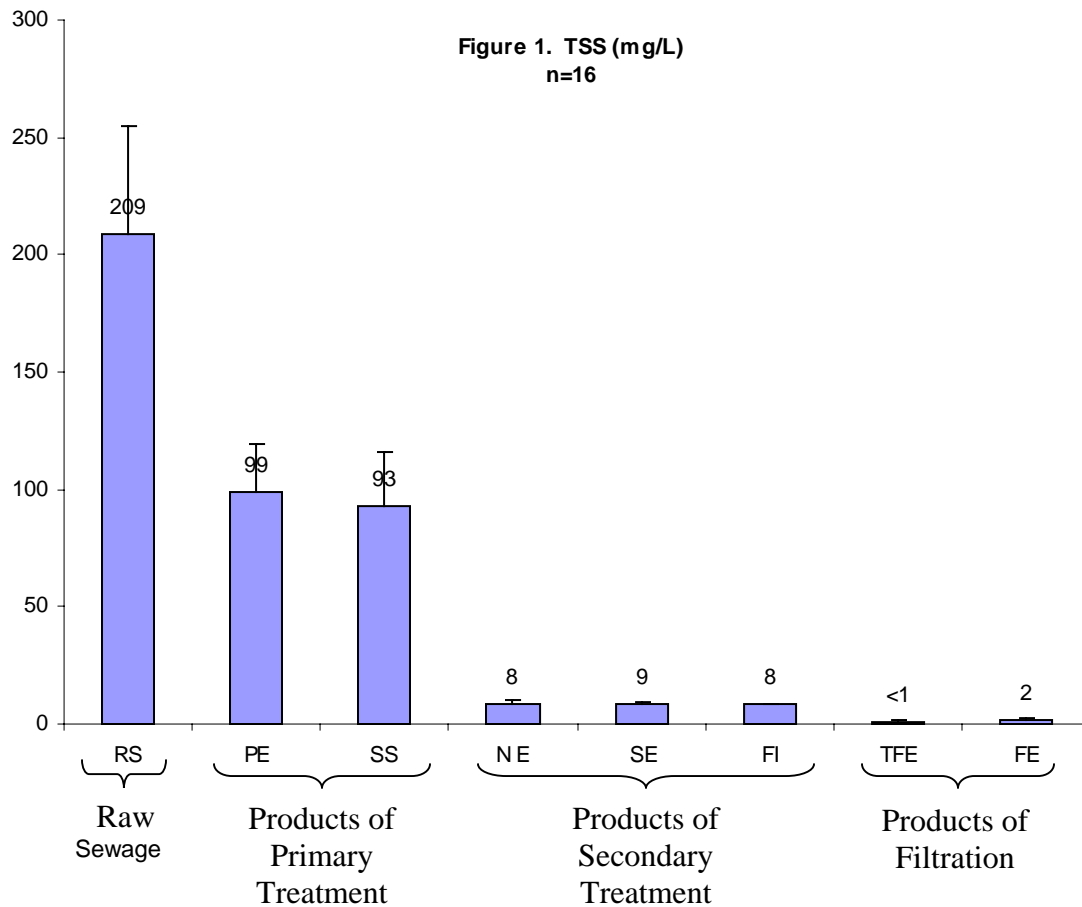
Data from a preliminary study conducted during the previous year had already demonstrated the removal of total mercury at points in the process corresponding to solids removal. Total Suspended Solids are reduced by approximately 50% as a result of primary treatment. Between Primary effluent and Secondary effluent, TSS is reduced by another 90%. (Figure 1). This trend is nearly identical for total mercury removal (Figure 2).

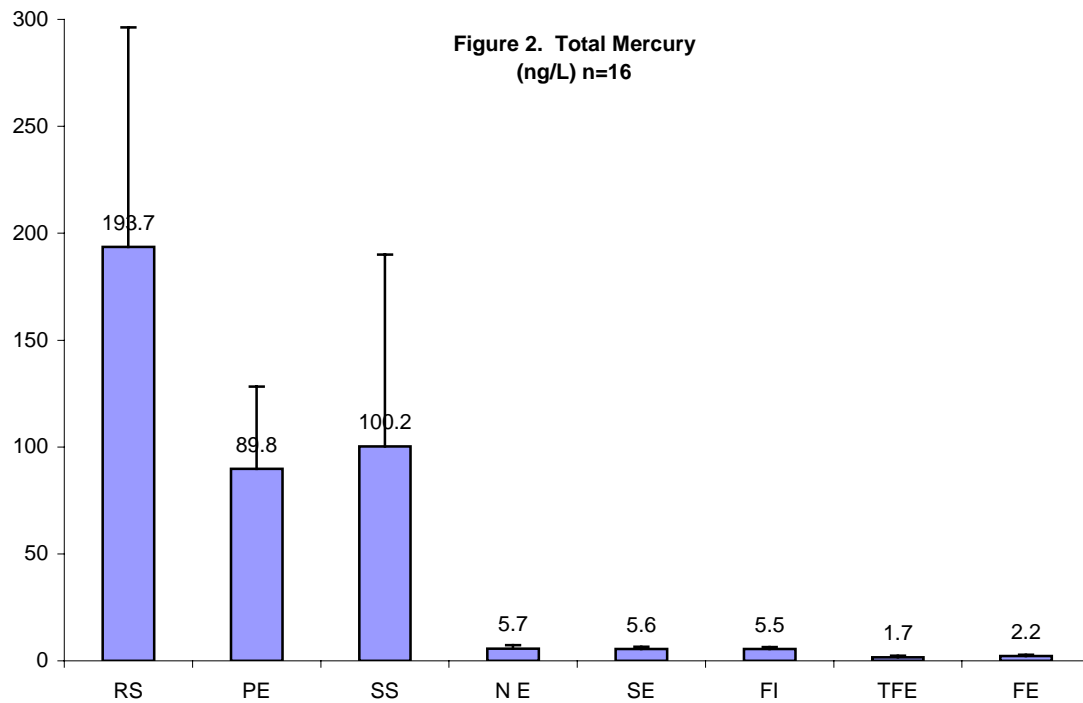
Table 1. Description of Sampling Locations

Sample Name	Designation	Description	Practical Grouping
Raw Sewage	RS	Raw, untreated sewage, after passage through grit screens to remove very large debris	Raw Sewage
Primary Effluent	PE	Effluent from primary treatment where large and heavy particles are removed	Primary Effluent
Settled Sewage	SS	Primary Effluent sent to equalization basins during daily higher flow hours and returned during lower flow hours to equalize flow through the secondary process. Residence time is usually less than 24 hours.	Primary Effluent
“Nitrification” Effluent	NE	Effluent from the side of the secondary activated sludge process historically known as “nitrification.” It is smaller in	Secondary

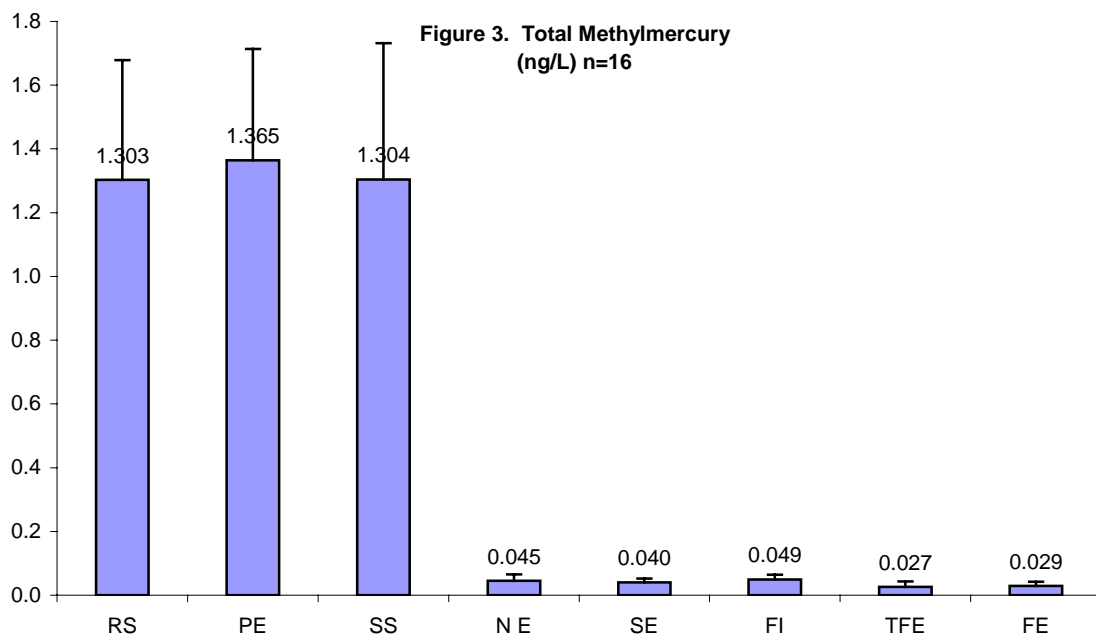
		size than “secondary” and is not operated continually throughout the year, depending on flow.	
“Secondary” Effluent	SE	Effluent from the side of the secondary activated sludge process historically known as “secondary.” It is larger than “nitrification” and operates continually throughout the year.	Secondary
Filter Influent	FI	Combined flow to the filters from “nitrification” and “secondary, sometimes pre-chlorinated for filter maintenance.	Secondary
Tertiary Filter Effluent	TFE	Tertiary Filter Effluent is the filtered flow before treated filter backwash is occasionally added back.	Tertiary
Final Effluent	FE	Final effluent has passed through disinfection (chlorination and dechlorination)	Tertiary
Sludges			
Primary Sludge	PS	Primary sludge is comprised of all the floatable and sinkable material from the Primary Settling Tanks. It is delivered directly to the digesters	Primary
Waste Nitrification Sludge	WNS	Waste Nitrification Sludge is the sludge generated in the “Nitrification” side of the secondary activated sludge process.	Secondary
Waste Activated Sludge	WAS	Waste Activated Sludge is the sludge generated in the “Secondary” side of the secondary activated sludge process.	Secondary
Thickened Activated Sludge	TAS	Thickened Activated Sludge is the combination of WAS and WNS after de-watering by dissolved air floatation (DAF).	Secondary

Digester Sludge	DS	Digester Sludge is the product of sludge digestion. This represents sludge that has digested for an average of 35 to 45 days.	Primary + Secondary
Lagoon Sludge	SL	Digester Sludge that has been pumped out to the Residual Sludge Management lagoons for drying. The age of this sludge sample can vary greatly, from days to months.	Primary + Secondary



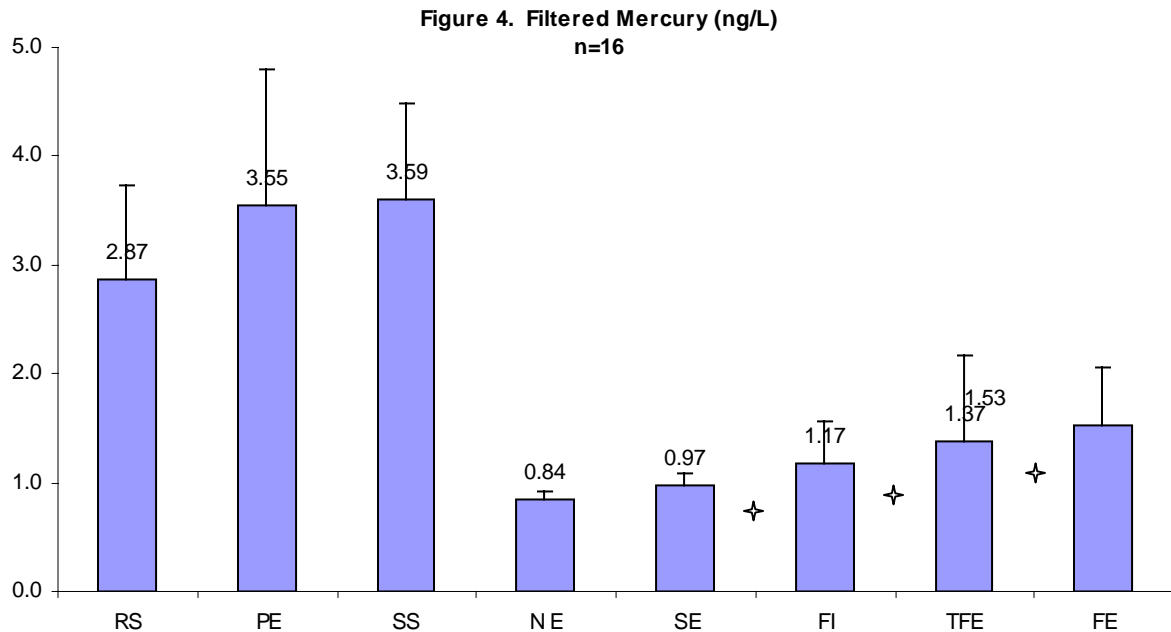


Methylmercury, however, shows nearly no drop as a result of primary treatment, but falls significantly in subsequent treatment steps. The most conspicuous drop in methylmercury appears to be in the secondary (activated sludge) process, where the concentration is reduced by approximately 97% (figure 3). One theory for this pattern is that the mercury removed at primary treatment is mostly associated with large particles with which methylmercury is not typically strongly associated.



Total and methylmercury do not appear to change appreciably when the treatment stream is diverted to the equalization basin. This indicates that settled sewage (SS) may be considered to be equivalent to primary sewage (PS). This similarity may not be surprising since the function of the equalization basin is not treatment, but flow regulation from primary to secondary process steps.

Dissolved mercury concentrations are quite low, and are reduced further through the treatment process, but with a pattern that differs from total mercury and total methylmercury. There is a clear reduction in dissolved mercury between RS and FE, but there appears to be a minimum at the secondary activated sludge process. Dissolved mercury concentrations average approximately 3 ng/L in the early stages of the process, are reduced to a minimum of approximately 0.9 ng/L in the secondary process, and increase again slightly to 1.5 ng/L in FE (figure 4).

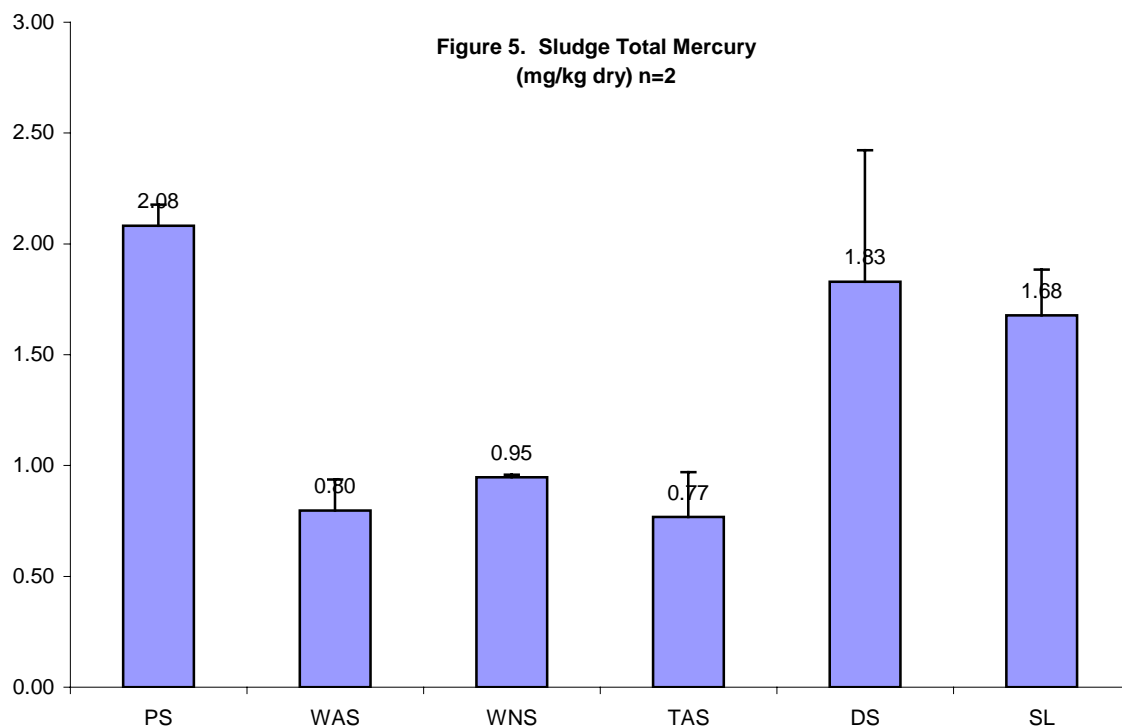


Although variability is relatively high in some process steps, the trend seems fairly robust. The causes for this pattern have yet to be identified. One possibility, however, is that chlorination for disinfection or operational maintenance of the filters has an effect. Chlorine is occasionally added before and after filter influent, and is continually added after filter effluent for disinfection. Stars in figure 4 indicate these process points.

Sludge total mercury data are currently available for only two collection events. These initial data show a range from 0.63 to 2.15 mg/kg dry (figure 5). Highest concentrations appear to be in the Primary Sludge (PS), where the greatest amount and largest particles of solids are removed. Although not accurately quantifiable at this point, it is interesting to note that this is consistent with the large drop in total mercury at the primary treatment step.

Three sludge sample types were collected from the secondary treatment step: Waste Activated Sludge (WAS), Waste Nitrification Sludge (WNS), and Thickened Activated Sludge (TAS). In practice, the Plant secondary process is run as a parallel operation. This has been true since the late 1990's when the area formerly operated as a nitrification step was converted nearly identical operating parameters as the secondary area. Therefore, we expect that WAS and WNS should have similar characteristics. WAS and WNS are thickened, and then blended to comprise Thickened Activated Sludge (TAS) that then flows to the sludge anaerobic digesters. Primary Sludge (PS) flows to the digesters through separate lines.

Two sludges were collected after the sludge digestion step: Digester Sludge (DS) and Lagoon Sludge (SL). The sludges collected from wastewater primary and secondary treatment processes (PS and TAS) are anaerobically digested at 90 degrees Fahrenheit over a period of 35 to 45 days. Digester Sludge is collected from the digester effluent, and SL is collected as sludge flows to the drying lagoons.



Next Steps

Data are limited from some phases, but opportunities for sampling design optimization and augmentation are already evident. For example, the similarity between PE and SS

samples suggests that little change occurs from balancing plant internal flows by temporarily diverting part of higher PE flows to the equalization basins and returning them. Therefore, the settled sewage (SS) station may be omitted to allow sampling at other locations. One likely new inclusion is Treated Filter Backwash. Suspended solids increase slightly from TFE to FE, and mercury increases commensurately. Filter backwash is treated with alum, clarified, and returned to the waste stream ahead of Final Effluent. According to Operations staff, this flow may at times be as much as 10% of total flow. Quantification of this input of solids and mercury will allow better characterization of sources to final effluent.

Patterns of methylmercury removal have prompted questions regarding possible transitions between particle-bound and dissolved forms of mercury. Methylmercury concentration does not seem to change between RS and PE, suggesting that it may be bound to small particles not removed in the primary process, or that it may be present in the dissolved phase at the primary process step. The drop in methylmercury between PE and NE / SE is greater than what might be expected from a simple removal of solids, suggesting additional transformational processes may be at work. One theory is that the Biological Nutrient Reduction (activated sludge secondary) process effectively sequesters some of this into solid bacterial biomass, which is removed as sludge. Addition of filtered methylmercury to the analyte list at selected stations may help further identify processes and pathways of methylmercury reduction through the process.

As described in the SAP, Phase II is scheduled to begin in June 2005. A thorough review of the data will be performed, including statistical analyses to evaluate sample size and frequency necessary to optimize the program and add detail to the design of the second phase. In addition, the need and possible sample locations for gas phase sampling will be evaluated at that time.